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THE

JOURNAL

OF

THE ASIATIC SOCIETY

OF

BENGAL.

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VOL. IV.

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1870

# THE ASIATIC SOCIETY

MEMBER

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THE  
JOURNAL  
OF  
THE ASIATIC SOCIETY  
OF  
BENGAL.



EDITED BY  
JAMES PRINSEP, F. R. S.

SECRETARY OF THE AS. SOC., AND HON. MEM. OF THE AS. SOC. OF PARIS. COR.  
MEM. OF THE ZOOLOGICAL SOC. OF LONDON AND OF THE ROYAL SOC.  
OF MARSEILLES.

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VOL. IV.

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JANUARY TO DECEMBER,  
**1835.**

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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease."

SIR WM. JONES.

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**Calcutta:**

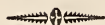
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SOLD BY THE EDITOR, AT THE SOCIETY'S OFFICE.

1835.



# P R E F A C E.



THE Journal has now survived its fourth year of existence, or including the *Gleanings in Science*, its seventh; yet so far from feeling its vigour abated, or finding its contributors grown languid, or its supporters falling off, the past year has produced a volume overflowing with original matter, even to the exclusion of extracts from the publications of Europe—a volume exceeding by fifty pages of text any that has preceded it, and embracing nearly double the usual number of plates.

The List of Subscribers in India remains in numbers much the same as before; but the demand for the work in England increases daily, and much of the new matter it contains is greedily transferred to the pages of European literary and scientific periodicals of wide and established circulation. The Editor says thus much by way of information to his numerous correspondents throughout India, who have not the opportunity of perusing the home journals, and who lose sight of their own labours the moment they have entrusted them to his pages.

The pecuniary aspect of the concern, up to the end of 1835, would not appear very encouraging to a *speculator*, but it is satisfactory as far as regards the object of maintaining a recipient for literary and scientific researches in India, at the smallest tax upon its supporters, and yet without any ostentation of personal sacrifice. The collections up to the present day have been in all .....

Sicca Rupees,	16996	11	8
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There remain due by Subscribers in Bengal,	1815	5	0
and by the Asiatic Society, for copies furnished to its Members, in 1835, .....	1020	0	0

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Making the total income of four years, Rupees,	20868	6	8
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The printing expence for 3 years			
has been, .....	10796	14	2
for 1835, say.....	3500	0	0
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The expence of Plates for 4 yrs. ...			
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of lithographs,.....	2149	1	0
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Expence of circulation, keeping accounts,			
freight, postage, and other contingencies, .....	3436	0	1
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Making the total expenditure, Rupees, .....	21385	2	2
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And leaving upon the whole transaction a balance against the Editor of Rupees 516 11 4 exclusive of the portion of outstandings, which (with regret be it said) must be written off as irrecoverable.

Although the price of the work is already lower in proportion than that of any similar journal in England, France, or India, the Editor has felt it incumbent upon him to volunteer a further small reduction, for the sake of simplifying accounts and uniting with the Asiatic Society in the adoption of the new currency. Subscribers all over India will henceforth have to pay one Rupee per number, without any regard to the fractional excess of the late Calcutta sicca.

The loss to the Editor by this resolution would have been six and a quarter per cent., had it not been most considerably met by a corresponding reduction, from the old to the new rupee, in the charges for printing by the Proprietors of the Baptist Mission Press, to whom he thus begs to offer his public and sincere acknowledgments.

The calculated amount of postage paid by up-country Subscribers to the Government has been, in the past year, Sicca Rupees 1200, without including the profits from an extensive correspondence due entirely to the existence of the Journal. The labours of the Post Office Committee are not yet completed ; it would therefore be premature to hold out any promise of more favorable rates to such subscribers as have been induced to withdraw on account of the dâk charge exceeding the price (and it may be presumed in their eyes, the value) of the work

Some modification of the existing scale of postage may however confidently be expected, which may save contributors especially from the heavy tax on the transmission of manuscripts\*.

If it be asked, what has been the most prominent object of interest discussed in the present volume, the answer must naturally point to the Proceedings of the Asiatic Society, in regard to the publication of the Oriental Works which had been suspended by an order of the Supreme Government, dated the 7th March, 1835.

Without venturing to impugn in any degree the wisdom or policy of a measure which has in the face of all India withdrawn the countenance of Government from the learned natives of the country, and pronounced a verdict of condemnation and abandonment on its literature, it may be allowable in this place to prophecy, that the conduct of the Asiatic Society, in stepping forward to rescue the half-printed volumes of Sanscrit, Arabic, and Persian, will be approved and applauded by every learned Society and every scholar in Europe. Left in their unfinished state, they would have indeed merited the opprobrious designation of an "accumulation of waste paper," applied to them by the Government which had originally ordered, and had expended vast sums upon, their publication.

There seems something so anomalous in this sudden change of state resolve, that it can be explained (excused would be too presumptuous a term) only by the peculiar constitution of the British Indian Government, in which the interests of a literature, and of languages, necessarily foreign to the deputed ruler of these distant provinces of the British Empire, must be left to the fluctuating opinions and influence of his local advisers. The unbiassed spectator beholds, at one period, the Government accusing itself of doing nothing for Indian learning and making amends by establishing colleges and patronizing publications and translations into the Oriental languages: anon, he beholds it throwing up all the works half translated or half printed; and withdrawing all the scholarships and exhibitions, which had been instituted for the encouragement and support of poor native students;—annulling most of the appointments which

\* In one case, *Twenty-two* Rupees on a brief article from Bombay.



heretofore were held out as temptations to the study of the classical languages by Europeans—and leaving the completion of the *Mahábhárat* to the charity of private subscription, along with the statistical information collected by BUCHANAN ; the geographical and geological, by MOORCROFT, VOYSEY, and HERBERT ! When he sees all this, and a contribution of 1200 rupees refused for the printing of a Cochin Chinese Dictionary, tendered by a Catholic Bishop, in the distressed state of his Mission, even without demanding any remuneration for the labour of compilation, can he divest himself of the idea that the presence or the absence of a Sir WM. JONES, a WILKINS, a COLEBROOKE and a WILSON have influenced these opposite resolutions ? The learned world will at any rate rejoice that our Hindustáni, Bengáli, Marhatti, Tibetan, and Sanscrit Dictionaries have passed into permanent existence anterior to the epoch of interdiction ; and that while the Asiatic Society supplies, however feebly, the patronage lost elsewhere, India need not be wholly dependent upon France and Germany for its editions of the Sanscrit classics, and for the development of the ancient history and philology of the nations under British rule.

This is the gloomy side of the annual picture ; but let it not be imagined, that there is no sunshine ; nor that we seek to shade it.

The government has liberally rewarded and patronized the labours of Mr. MASSON, and of MOHAN LA'L,—it has deputed a scientific mission under charge of Dr. WALLICH, into the tea districts of Assam ; it has in like manner deputed Mr. ADAM, to follow the steps of Dr. BUCHANAN, in collecting statistical information principally in connection with the education of the people ; it has employed its engineer officers in a grand sectional survey of a line from Rájmahal to Cutwa, with the view to examine its fitness for a canal to join the Huglí and Ganges : and it still supports on a magnificent scale the grand Trigonometrical Survey of India. The journal has not indeed been favoured with any report of the progress of these great works, but it is known that the canal survey is now finished :—and that Major Everest has completed the measurement of a second base near Seharanpur. Other official reports, such as surveys of Socotra, of the Maldives, Mr. Gordon's excursions in China

and the discovery of inscriptions in Arabia, have been obligingly communicated by the Bengal and Bombay Governments.

The train of individual discoveries, physical and antiquarian, has progressed without intermission : most interesting inscriptions and coins have been brought to light, and illustrated.

Fossil animals, of new and extraordinary species, have followed the discovery of Cuvierian genera, themselves but recently made known, in the Siválik range : the history of the Malayan states, accounts of various sects, of ancient ruins, of Buddhist cosmogony, and of Tibetan works, are among the subjects of the present volume ; and it is but fair to state, that materials for a new volume of the Quarto Researches have been collecting, and printing, at the same time with the contents of the Society's Journal.

Contributions in Meteorology this year have seemingly been wanting : they have however been received regularly from various quarters, and, now that the year is completed, will be made use of in a condensed form.

Criticism of Scientific Works published in India has indeed been neglected, and that during a period when the press has been unusually prolific. This department of labour, as far as regards the bringing to public notice new works, has been amply fulfilled by the daily press ; and beyond this it would be hardly safe to extend the province of criticism in this country, where the Editor cannot conceal his own fallibility under the disguise of an anonymous review.

Want of space and want of leisure must, in the last place, be pleaded as an excuse for the absence of retrospective analyses of the progress of the Sciences in Europe. The EDITOR hopes to obtain the aid of friends whose attention will be particularly engaged in pursuing these branches of knowledge in the ensuing year ; but all official functionaries in India are so fully occupied, that it is hard to expect from them work of supererogation. It is some consolation, that the Indian reader being himself somewhat in the same predicament, will not have time to discover the blemishes and blanks of our amateur periodical.

CHICAGO, ILL., MAY 1, 1914

TO THE EDITOR:

SIR:

I have the honor to acknowledge the receipt of your letter of the 28th inst. regarding the matter of the publication of the report of the Committee on the Standardization of the Medical Profession, and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. HARRIS, Secretary.



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- "In the second volume of the JOURNAL, page 79, the name of Ellora is written Ellore, in giving the site of trap rocks penetrated by tubular calcedonies. As the rocks at Ellore are of a very different formation, it is desirable that this error should be corrected. Ellore is near Golconda."

- Page 400, line 37, 38, *for* 'Maha Yazawen wen dan gyee,' *read* 'Maha Yazawen dau-gyee.'
- 40, 41, *for* 'Thore Khettara,' *read* 'Thare Khettara.'
- 401, 31, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 33, *for* 'at the foot of,' *read* 'at the ford of the.'
- 402, 3, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 6, *for* 'Tsalen wot thaken young,' *read* 'Tsalen wot thakan zoung.'
- 7, *for* 'Kan shyé young,' *read* 'Kan shyé zoung.'
- 9, *for* 'Than bethen,' *read* 'Than bathen.'
- 10, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 14, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 15, *for* 'Tsalen wot thaken,' *read* 'Tsalen wot thakan.'
- 18, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 21, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 30, *for* 'Yonatha,' *read* 'Yowatha.'
- 403, 26, 27, *for* 'Nga young gyan,' *read* 'Nga zoung gyan.'
- 28, *for* 'Male mountain,' *read* 'Malée Mountain.'
- 404, 1, and 2, *for* 'Taroup maur,' *read* 'Taroup mau,' and in the note *for* 'Symess Taroup mion' *read* 'Symes's Tirroup mion.'
- 28, 29 *for* 'Toungug:' *read* 'Toungngu.'
- 30, before 'called,' *dele* 'is.'
- 36, *for* 'Wasted,' *read* 'washed.'
- 37, *for* 'Langa manda,' *read* 'Lauga nanda,' and *for* 'Anauratha zan,' *read* 'Anarautha zau.'
- 413, last line, *for* 'N. S.' *read* 'N. E.'
- 429, 5, *for* 'Colophonite,' *read* 'Colophonitic rock is.'
- 432, 25, *for* 'erratic,' *read* 'euritic.'
- 505, 22, *for* 'Eclipse,' *read* 'Bessy Bedlam.'

*Errata in the 3rd Volume.*

- Page 178, line 24, *for* 'Fokien, Kyanti, and Kyang-nau,' *read* 'Fokien, Kyan-si, and Kyang-nan.'
- 26, *for* 'Lu-ngau-cha,' *read* 'Lu-ngan-cha.'
- 27, *for* 'Paelcha,' *read* 'Pacul-cha.'
- 179, 10, *for* '62°5', *read* '62°.5.'
- 180, 3, *for* 'Kyang-nau,' *read* 'Kyang-nan.'
- 31, *for* '54°5' Farh. *read* '54°.5 Farh.'
- 181, 14, *for* '60°9', *read* '6° to 9°.'
- 182, 4, from bottom, *for* '1,200 or 1,400 feet,' *read* '2000 feet.'
- 183, Erase the section.
- 184, 8, from the bottom, *for* '29° 30', *read* '29° to 30°.'
- 185, 8, *for* '29°30', *read* '29° to 30°.'
- reference at the bottom of the page, *for* 'Transactions,' &c. *read* 'Asiatic Researches,' Vol. XVI.
- 186, 20, *for* '29°30', *read* '29° to 30°.'
- 25, *for* '12 to 1,400,' *read* '2000 feet.'
- 28, *for* 'mean,' *read* 'main.'



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# JOURNAL

OF

THE ASIATIC SOCIETY.

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No. 37.—January, 1835.

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I.—*Analysis of a Tibetan Medical Work.* By M. ALEXANDER CSOMA DE KÖRÖS.

THE principal work on medicine in Tibet, is that entitled the “*rGyud bZhi*” (ལྷན་པ་ནི the tract in four parts). It is attributed to SHA’KYA, though not introduced into the *Kah-gyur* or *Stan-gyur* collections.

When in Tibet I requested the LAMA, my instructor in the language of the country, to give me an account of its contents, which he did in an abridged compilation divided, like the original, into four parts. The present translation of the LAMA’S manuscript may be interesting to those who are curious on the subject of Tibetan literature, and the state of medical practice in that remote part of the world. The materials of the original are as usual all derived from Sanskrit works, which have not however hitherto been made known in an English dress.

The following is the account given in the work itself of the manner in which this Treatise of Medicine found its way to Tibet.

In the time of KHRI-SRONG DEHUTSÁN (in the 8th or 9th century of the Christian era) a Tibetan interpreter BAIROTSANA (or Vairochana) having translated it in Cashmír, with the assistance of a physician-pandit (ཏཱ་བ་མངོན་པ་དཔལ་འཁོར་-Davá mÑon-gah) presented it to the above mentioned Tibetan king. At that time it was received by “GYU-THOG” a learned physician, and by several others, and afterwards it devolved successively to others till GYU-THOG, (the 13th in descent, from the first) styled the New GYUTHOG, to distinguish him from the former physician of the same name, who is called ‘the ancient.’ This physician much improved and propagated it; and at that time, it is stated, nine men became learned in medicine.

The LAMA, who wrote me this extract, enumerated several works on medicine, current in Tibet, of which the most celebrated is a

commentary on the present work, entitled “Baidúrya sñon-po” (the lapis lazuli) written by “Sangs-rgyas rgya mts’ho” སྙེ་ལྷི་ར་ལ་དམ་ཐུས་ཐུ་མ་ལྷོ་ a regent at Lassa about the end of the 17th century.

The LAMA states that there are about forty books or works written in Tibet, on medicine, besides the five volumes in the Stan-gyur collection, and the scattered occasional instructions on medicaments in the Kah-gyur.

The chief medical school in Tibet is at Chák-phuri (ཡུགས་ཕུ་རྫོང་) a monastery at or near Lassa. There are also two others, in middle Tibet, of some repute, called Cháng-Zúr (བྱང་ཆུབ་).

### FIRST PART.

This is entitled རྩ་བའི་རྒྱུད་, rtsa-vahi-rgyut the root or basis of the (medical) tract. It is divided into six chapters.

#### First Chapter.

In this is described how CHOMDANDAS (SHAKYA) transforming himself into the shape of a chief physician, in a forest of medical plants, delivered his instructions, in a superb palace, in the presence of gods, sages (or *Rishis*), and a large train both of heretic and orthodox hearers.

#### Second Chapter.

He (SHAKYA) addressed his audience thus :—“Assembled friends! be it known to you, that every human creature who wishes to remain in health; and every man who desires to cure any disease, and to prolong life, must be instructed in the doctrine of medicine. Likewise, he that wishes for moral virtue, wealth, or happiness, and desires to be delivered from the miseries of sickness; as also, he that wishes to be honoured or respected by others, must be instructed in the art of healing.” Then one of the hermits or Rishis (བྲང་སྤྱོད་-Drang-Srong) expressing his desire of promoting the well-being of others, requested his advice as to the manner in which he might become instructed in the doctrine of medicine. Then the teacher (SHAKYA) said: (or commanded) “He must be instructed in the four parts of the medical science, which are the

རྩ་བའི་རྒྱུད་,—; བསྟན་པའི་རྒྱུད་,—; མཉམ་པའི་རྒྱུད་,—; and རྩལ་པའི་རྒྱུད་

root or theory, explication, instruction, and lastly manual operation; farther, he must be instructed in the eight branches of healing; viz. 1, the curing of the whole body; 2, of particular diseases, incident to children; 3, to women; 4, the curing of diseases caused by evil spirits; 5, of wounds made by a knife, spear, &c.; 6, of all sorts of venomous or poisonous infections; 7, of the infirmities of old age; and 8, the increasing of virility in men. These are the principal divisions of the whole medical treatise.

The number of chapters in the four parts of this medical tract, amount to 156.

In the explanatory part, there are 11 places or sections, and 31 chapters; in the instructive part on cures or remedies for each specified disease, there are 15 circumstaues and 92 chapters;—the last part has four divisions and 27 chapters.



*Third Chapter.*

The theory of the human constitution is illustrated by a similitude taken from the Indian fig-tree (ཞིང་ཕྱི་ངན་མེད་). Thus, there are three roots or trunks ; thence arise nine stems ; thence spread 47 boughs or branches ; thence 224 leaves ; two blossoms, and three fruits. The explication of the simile as applied to the states of the body. The single root or basis of diseases ; the stems, branches, and leaves arising thence, taken or considered in a healthy and in a diseased state. Distinctions with respect to wind ; ditto, with respect to bile ; as also to phlegm ; their respective offices, operations or influences.

There are seven supports of the body on which life depends ; the chyle, blood, flesh, fat, bone, marrow, and semen. Description of the three sorts of excretions or sordes of the body ; ordure, urine, and sweat.

The three generative causes of disease are : lust or ardent desire ; passion or anger ; dulness or ignorance. By the first is caused wind ; by the 2nd, bile ; by the last, phlegm. The accessory causes of disease are four : 1, season with respect to cold and heat ; 2, any evil spirit ; 3, wrong use of food ; and 4, ill conduct of life.

The parts of the body, commonly subject to diseases, are six : the skin, the flesh, the veins, the bones, the viscera, and the bowels.

The proper places of the three humours are : that of the phlegm in the upper part of the body, as the proper place of dulness, in the brain or skull ; that of the bile, in the middle part of the body, which is appropriate to anger ; and the wind resides in the lower part of the trunk, in the waist and loins, as in its proper place.

There are 15 ways or channels through which disease spreads itself. The channels of the motion of wind are, the bones, the ear, skin, heart, artery, and the guts. The blood, sweat, the eye, the liver, the bowels, are the ways or vehicles of bile. The chyle, flesh and fat, marrow and semen, ordure and urine, the nose and the tongue, the lungs, the spleen, and the kidneys, the stomach, and the bladder, are the vehicles for the conveyance of the phlegmatic humour.

With respect to the three humours, this farther distinction is made : wind is predominant in the diseases of old people ; bile, in those of adolescents or youths ; and phlegm, in children.

With respect to place (or part of the body) ; wind occurs in the cold parts of the body ; bile in the dry and hot parts ; phlegm abides in the moist and unctuous parts.

The several seasons, in which the diseases caused by any of these three humours prevail, are thus stated : diseases, caused by wind, arise commonly during the summer season, before the dawn, and about mid-day. Those caused by bile, in autumn, about mid-day and mid-night. Phlegm prevails during the spring season, and in the morning and evening.

There are specified nine sorts of diseases, in which there is no hope of recovery.

On the 12 causes by which any of the diseases caused by any of the three humours, is changed into another, as wind into bile and phlegm, &c.

All diseases are classed under two heads : heat and cold. Those, in which wind and phlegm prevail, being of natural water, belong to cold. Blood and bile, being of natural fire, belong to heat. The diseases caused by the worms and the serum, belong both to cold and heat.

*Fourth Chapter.* On the symptoms of diseases. On examining the tongue and urine. On feeling the pulse. On asking (orally) after the circumstances, how the disease first arose, and its progress,—what pain is felt, what sort of food has been useful or noxious?

Especially with respect to the tongue: If the tongue is red, dry, and rough, it is the sign of prevailing wind; if covered with a yellowish white thick substance, it is the sign of bile; if covered with a dim, white, soft, and moist substance, it is the sign of phlegm.

With respect to the urine: If the urine of the patient is blue, clear like spring-water, and has much spume or froth, it is the symptom of wind; if yellowish red and thick, steaming or vapouring greatly, and diffusing a smell, it is the sign of bile; if white, with little smell, and steam or vapour, it is the sign of phlegm.

With respect to the pulse: When the physician feels the pulse, if beating greatly upwards it somewhat stops, (if irregular) it is the sign of wind; a quick full beating is the sign of bile; a sunk, low, and soft beating is the sign of phlegm.

The physician's 29 questions to the patient about his food, exercise, and the pains or relief felt after having taken such and such a food, made such and such an exertion, &c. are here detailed.

*Fifth Chapter.* On the means of curing diseases.

1. With respect to food:

The several sorts of flesh, grain, vegetables, and liquids employed successfully in curing diseases caused by wind. Specification of the several sorts of animal and vegetable food, and of soup and liquids or potions, by which bile is cured. Ditto of those that are good against phlegmatical diseases.

2. With respect to one's conduct of life or exercise.

It is good against wind to remain in warmth, and to have a companion with whom one can best agree. Against bile: to remain in a cool and still place, or undisturbed. Against phlegm: to cease from exertion or business, and to remain in warmth.

3. With respect to medicaments to be used against these three humours.

Those against wind are of three different tastes: sweet, sour, and saline; and with respect to their efficacy, unctuous, heavy, and soft.

Those used against bile are, sweet, bitter, and nauseous bitter:—their efficacy; coolness, thinness, and dulness, or bluntness.

Those used against phlegm are, hot, sour, and acrid:—their efficacy: sharpness, roughness, and lightness.

Mixtures of medicaments with respect to their tastes; for assuaging pains, and for carrying off diseases, or for purging.

1. Assuaging medicaments:

Against windy diseases: soup, and medical butter (a kind of sirup).

Against bile: liquid medicine and powder.

Against phlegm: pills and powdered medicine (aromatics?)

The several kinds of soup are: of bones, flesh, butter, molasses; of wine, &c.

There are specified five kinds of sirup, according to the different principal ingredients, their several applications and effects.

2. Depuratory or purging medicaments.

In windy diseases: a gentle depuratory medicament.

In bilious diseases: a purging physic.

In phlegmatic diseases: emetics.

With respect to the first there are specified three sorts of depuratory medicaments, the purging medicaments are of four kinds, the emetics are of two sorts.

With respect to physical (or chirurgical) operation, against wind: the smearing of the body with butter, &c. and cauterising in the Hor (or Turkish) manner. Against bile: phlebotomy, and cold water (or bathing in ditto). Against phlegm: warm applications, and cauterising.

Specifications of the several kinds of cures against wind, bile, and phlegm. They amount to 98 (compared to so many leaves). If the physician is skilful and diligent in his application, and the patient obedient and respectful, so will the latter soon be delivered from disease.

*Sixth Chapter.* Recapitulation of the three last chapters. According to the former metaphor or allegory of the Indian fig-tree, there are three roots (or trunks): 1, the root, place, or ground of the disease; 2, that of the symptoms, and 3, that of the manner of curing.

There arise from the first trunk (or root) two stems: that of the unchanged state of the body, and that of the changed or diseased state of the body.

From the 2nd trunk (or root) there arise three stems, namely: those of looking on, feeling, and asking (or of inspection of the tongue and urine; of the feeling of the pulse; and of asking after the circumstances of the disease).

On the 3rd trunk there arise four stems: those of the food; of the manner of living or conduct of life; of the medicaments used; and of the operations performed. Therefore, from the three trunks (or roots) their arise nine stems.

The number of the boughs or branches:

Those branching from the stem of the unchanged body are: disease, the seven supports of the body, and the fæces.

On the stem denoting the changed or diseased state of the body, there are the following 9 boughs: cause of disease, accessory causes, beginning or injured parts, place, way, time of arising (or of the fit), fruit or consequence, causes of transition from one into another disease; the reduction of all diseases to heat and cold.

On the stem denoting the symptoms of diseases, there arise the following eight boughs: 2 of inspecting the tongue and urine. Of feeling the pulse, there are 3: wind-pulse, bile-pulse, and phlegm-pulse. And in asking after the circumstances of the disease, there are 3. Altogether eight.

On the stem denoting the manner of curing, there arise the following boughs or branches: 3 of food or meat; 3 of drink or potion; 3 of the manner of living or of the conduct of life; 6 of physic with respect to taste and efficacy; 6 of the assuaging mixtures, with respect to taste and efficacy; 3 of depuratory physic. There are also 3 boughs of medical (or chirurgical) operations. Thus in all there are 47 boughs or branches.

The number of leaves (or of leafy branches) issuing from the 47 boughs:

1st. On the top of the unchanged stem, the enumeration of 25 diseases.

2nd. On the top of the stem denoting the changed or diseased state of the body, 63 symptoms or tokens of indisposition.

3rd. On the top of the stem of inspection (or examination of the tongue and urine), 6 branches or leaves of inspection.

4th. On the top of the stem of feeling, three sorts of pulse (or three manners of beating of the pulse).

5th. On the top of the stem of asking the patient about the circumstances of the disease, 29 questions.

6th. On the top of the stem denoting the food (diet, meat, and drink or potion) of the patient, there are the enumeration of such, as : 14 in respect to wind ; 12 to bile ; and 9 to phlegm.

7th. On the top of the stem of the conduct of life, 6.

8th. On the top of the stem of physic nine tastes and nine efficacies are enumerated, together 18 ; 3 kinds of soup or broth ; 5 kinds of medical butter or sirup ; 4 kinds of potions ; 4 kinds of powders ; 2 kinds of pills ; 5 kinds of powdered aromatics ; 9 sorts of depuratory application. Total, = 50 kinds of physic.

9th. On the top of physical (or chirurgical) operations, 7 leafy branches.

A summary exhibition of the above specified leaves :

1. On the trunk denoting the place and ground of diseases, there are 188 leaves.

2. On that denoting the symptoms, 38.

3. On that denoting the manner of curing, there are 98 leaves. Altogether making 224.

There are two blossoms : health and a long life.

There are three fruits : moral perfection (or good morals), wealth, and happiness.

These are the contents of the six chapters of the first part of this medical tract.

## SECOND PART.

There are four things to be treated of in the doctrine of curing or healing : 1, What is to be cured or healed ? 2, With what is it to be cured ? 3, In what manner is it to be cured ? 4, By whom is it to be cured ?

*1st Chapter.*—With respect to the first question, What is to be cured ? the answer is : the disease in the human body. 2, By what means : By diet or regular food, exercise, medicament, and by chirurgical operation. 3, In what manner is it to be cured ?—so that the patient recovering from his sickness, may remain long alive. To this place belongs the examination of the symptoms, the rules of curing, and the manner in which the cure is performed. The contents of this part of the treatise are reduced to four roots, and to 11 branches or minor parts.

*2nd Chapter.*—Cure is ordained for the well-being of the body. The origin or generation of the body. Cause, and accessory causes thereof. Tokens or signs of birth.

The cause of the generation of the body is stated to be : the father's seed, the mother's blood, and the arising of consciousness. If the first be predominant, there will be born a son ; if the second, a daughter ; if both are equal, then a hermaphrodite. Should it happen that the blood be formed into two masses, then twins will be born.

Out of the semen are formed : the bone, the brain, and the skeleton of the body. Out of the mother's blood are generated the flesh, blood, heart, with the other four vital parts, (lungs, liver, spleen, kidneys,) and the six vessels or veins. From the soul or vital principle arises consciousness through the several organs.

After the body has been thus conceived, the cause of its increase is in the two veins on the right and left sides of the womb, in the small vessel containing the mother's blood for menstruation, and in the chyle formed from the mother's food, which successively descending into the womb, concurs to the coagulation



or union of the semen, blood, and the vital principle, and to their increase, in the same manner, as water is conveyed, by certain canals, from a watering pond, to a field, for the production of corn.

The body, by the agitation of the (inward) air, being changed during 38 weeks, goes on continually increasing, for nine months.

The continual increase of the fœtus, or embryo, is thus : In the 1st week, it is like a mixture of milk and blood. In the 2nd week, growing somewhat thick, it is of a ropy or tenacious nature. In the 3rd week, it becomes like curds. In the 4th week, from the form, which the embryo takes, is conjectured whether it will be a son, daughter, or hermaphrodite. In the 1st month, the mother suffers both in her body and mind several disagreeable sensations.

In the 2nd month, in the 5th week, the navel of the body is first formed. In the 6th week, the vital vein (or artery), depending on the navel. In the 7th week, the forms of both eyes appear. In the 8th week, in consequence of the forms of the eyes the form of the head arises. In the 9th week, the shape of the upper and lower parts of the trunk or body is formed.

In the 3rd month, in the 10th week, the forms of the two arms and sides (or hips) appear. In the 11th week, the forms of the holes of the nine organs become perceptible. In the 12th week, the five vital parts (heart, lungs, liver, spleen, veins,) are formed. In the 13th week, those of the six vessels.

In the 4th month, in the 14th week, the marrows in the arms and thighs are formed. In the 15th week, the wrists of the hands and the legs of the feet are perceptible. In the 16th week, the 10 fingers and the 10 toes become visible. In the 17th week, the veins or nerves, connecting the outer and inner parts, are formed.

In the 5th month, in the 18th week, the flesh and fat are formed. In the 19th week, the tendons or sinews and the fibres are formed. In the 20th week, the bone and the marrow of the feet are formed. In the 21st week, the body is covered with a skin.

In the 6th month, in the 22nd week, the nine holes of the organs are opened. In the 23rd week, the hair on the head and on the body, and the nails commence to grow. In the 24th week, the viscera and vessels become entirely finished ; and then pleasure and pain is felt. In the 25th week, the circulation or motion of air or wind commences. In the 26th week, the memory of the mind begins to be clear.

In the 7th month, the 27th to the 30th week, the whole body comes to entire perfection, or is completely formed.

In the 8th month, from 31st to 35th week, the whole body, both within or without, greatly increases.

In the 9th month, in the 36th week, there arises a disagreeable sensation in the womb. In the 37th week, there arises a nauseous sensation. In the 38th week, the head turning to the entrance of the womb, the birth takes place. But, though the months are completed, yet, on account of the mother's menstruation, and of wind, birth may for some time be delayed.

Farther it is stated, that if the right side (of the pregnant woman) is high, and the body light, there will be born a son ; if the left side is high, and the body heavy, then a daughter ; if they both are in an equal state, an hermaphrodite. And if the middle or both the sides are high, then twins will be born.

The tokens and circumstances of approaching birth are then described.

(This may be seen at large, in the Kah-gyur, in the work entitled རྟམ་པ་ལྷོ་མ་གྱི་མཁའ་མཁའ་ལྷོ་མ་ “ d, Gah-vo m, ñal h, jug” Nanda entering into the womb.)

3rd Chapter.—The several members of the body are likened to certain things, 32 in number.

The manner of the existence of the body, under four distinct heads: 1. The quantity (in measure or weight) of the several constituent parts of the body, and the manner of existence of those parts on which the body depends. 2. The state of the veins and nerves. 3. On the nature of diseases, the enemies of the body. 4. The holes or openings for the circulation of the air, &c.

With respect to the 1st:

1. The quantity of the wind or air (in the body) is equal to one full bladder: that of the bile to the quantity of ordure once discharged; that of the phlegm—to one's three two-handfuls (the two hands three times full); that of the blood and ordure to seven ditto; that of the urine and serum to four ditto; that of the grease and fat to two ditto; that of the chyle and the semen to one handful; that of the brain to a single handful; that of the flesh=500 hand-fuls; (one handful being as much as can be enclosed once in a single hand.) Women have an excess of 20 more on account of their thighs and breasts.

There are 23 sorts of bones; in the back-bone, 28 are distinguished. There are 24 ribs; 32 teeth; 360 pieces of bones. There are 12 large joints of limbs;—small joints, 250. There are 16 tendons or sinews, and 900 nerves or fibres; 11,000 hairs on the head; 11 millions of pores of the hair on the body. There are five vital parts (or viscera) (as the heart, lungs, liver, spleen, and the reins or kidneys); six vessels, and nine openings or holes.—In *Jambudvīpa* the measure of a man's height is one fathom or four cubits—deformed bodies have only  $3\frac{1}{2}$  cubits, measured by their own.

With respect to the 2nd section, showing the state of the veins. There are four kinds of veins or nerves: 1, that of conception; 2, of sensation; 3, of connexion, and 4, that of vitality.

The 1st: From the navel there arise or spread three veins or nerves, one of them ascends to the brain, and is acted on by the dull part of it, generating the phlegm in the upper part of the body. Another nerve (or vein) entering into the middle, forms the vital nerve, and depends for its existence on the vital nerve of passion and blood; that part of it, which causes bile, resides in the middle. The third nerve (or vein) descends to the privy parts, and generates desire both in the male and female. That part of it, which produces wind, resides in the lower extremity.

The 2nd: There are four kinds of the nerves of existence or sensation.

For rousing (or exciting) the organs, in their proper place, there is in the brain a principal nerve, surrounded with 500 other smaller ones. Another nerve for making clear the organ of recollection or memory, resides in the heart, surrounded with 500 other smaller ones.

That nerve, which causes the increase and renovation of the aggregate of the body, resides in the navel, surrounded with 500 other smaller ones.

That nerve, which causes the increase of children, and descendants, resides in the privy member, together with 500 other smaller ones—and comprehends or encompasses the whole body.

The 3rd: The nerve of connexion consists of two kinds, white and black. There are 24 large veins (or nerves), which, like as so many branches ascending

the principal stem of the vital principle, serve for increasing the flesh and the blood. There are eight large hidden veins or nerves for making the connexion of the diseases of the viscera and vessels.

There are 16 conspicuous veins connecting the outward limbs, and 77 others spreading from them, called བྲུང་མུག་པོ་ bleeding veins (that may occasionally be opened to let out blood).

There are 112 hurtful or pestilential veins (or nerves); of a mixed nature, there are 189 others. Thence originate 120 in the outer, inner, and middle parts, that spread into 360 smaller ones. Thence smaller ones encompass the body as with a net-work.

There are 19 strong working nerves, which, like roots, descend from the brain, the ocean of nerves; from among them there are 13 that are hidden, and connect the intestines—six others, connecting the outward parts, are visible; from them spread 16 small tendons or sinews.

There are three vital nerves (or veins) in a man. The one encompasses both the head and the body; the second, associating with respiration, moves accordingly; the third is the principal, and connecting the veins or canals, for the circulation of air and blood, is occupied with generating or increasing the body, and being the vital nerve, is called, by way of eminence, the artery or the principal vital nerve.

With respect to the third point:

Diseases of consequence happen in the flesh, fat, bone, tendons, nerve, intestines, and veins.

Such diseases are counted in the flesh, 45; in the fat, 8; in the bone, 32; in the tendons or sinews, 14; in the intestines, 13; in the veins, 190. On the head, there are 62; on the neck, 33; in the trunk of the body, 95; in the four hanging members (two hands, two feet), 112. Thus important diseases are reckoned 302, of which 96 are said to be very dangerous, which cannot be cured by any expence or skill. There are 49 that are dangerous in a middle degree, but which may be cured by learned physicians. The rest may be cured by others also; since they are of no great consequence, though they also be reckoned among diseases of magnitude.

With respect to the fourth point:

Of the several orifices or passages for the conveyance of air, blood, drink, and food, both within and without, are enumerated 13 in males and 16 in females.

Through inconvenient food and exercise, these passages being hurt, there arises a distemper of the body, by the humours being either too much increased, issued, or hindered; or by taking wrong direction, confusion is produced. When the passages are clean, and free from any hurt, then the body is in a healthy state.

*5th Chapter.*—Characteristic description of the body. There is a two-fold division: 1, Those parts which are subject to injury (the body). 2, Those things by which they are injured (bad humours or diseases). First, of those that are subject to injury. These are thus distinguished: the supports, (or those parts which keep the body together), seven in number; as, the chyle, blood, flesh, fat, bone, marrow, and semen. Excrements, as ordure, urine, and sweat; also the dirt of the teeth, and under the nails, and the impurity issuing from other openings or passages.

1stly. The office of the seven supports of the body, and of the three excrements, is thus described:

The meat and drink, after being digested in the stomach, are changed into chyle and fæces. These turn into ordure and urine, that is, for the nutrition of the body, by increasing the blood. The blood preserving the moisture or humidity of the body, keeps up life, and increases the flesh. The flesh covering and cleansing the body, both within and without, produces the fat. This makes the whole body unctuous, and causes the increase of the bone. This supports the body and increases the marrow. This improves the essential sap of the body, and produces the semen virile. This conduces to the well-being of the whole body, and to the production of a new one.

The service, rendered by the fæces, is: the ordure serves for the support of the bowels, guts, &c. By urine, morbid humours are carried off; and it serves also for a support of the thinner fæces, and carries off the putrid thick sediments.

The office of sweat is to soften the skin, and to change the obstructed pores of the hair of the body.

Fire-warmth མེ་འྲོ་འྲོ་ is the common gentle warmth, or heat, of the whole body. The warmth of the stomach is the principal cause of the digestion of meat and drink of every kind. If this warmth is in good state, the digestion of meat and drink is easy; no diseases then arise, the lustre of the face, the chyle, the supports of the body and life, then increase. Therefore, the warmth of the stomach must be kept up, (or if lost, must be restored,) with every endeavour.

The manner in which meat and drink are changed. Whatever is eaten or drunk, is carried into the belly or stomach, by the vital air or wind; afterwards, by the aid of phlegm, it comes into fermentation of a sweet taste, and increases the quantity of phlegm. Afterwards, being digested by the aid of bile, taking a hot and sour taste, it produces bile. Afterwards, by the aid of the air or wind that conveys an equal heat to the whole body, the dregs or fæces being separated, and taking a bitter taste, it generates thin wind. The fæces being changed into thick (or solid) and thin (or fluid) parts, become ordure and urine.

The chyle, after having passed by nine veins from the stomach into the liver, it becomes or changes into blood; afterwards, successively, it is transformed into flesh, and the seven supports of the body.

2ndly. The hurtful things or bad humours. These are three: wind, bile, and phlegm, each with a five-fold division.

1. Of Wind. The life-keeping wind or air resides in the upper part of the head; that which operates upwards, has its place in the breast; that which pervades or encompasses all, resides in the heart; that which communicates or conveys an equal heat to the body, has its seat in the stomach; that which cleanses downwards, abides in the lower part of the trunk.

2. Of Bile. The digesting bile resides in the stomach, between the digested and indigested part; that which forms the chyle, resides in the liver; that which prepares or increases, in the heart; that which assists the sight (or causes to see), in the eye; that which gives a clear colour, resides in the skin.

3. Of Phlegm. The supporting phlegm resides in the breast; the masticatory, in the indigested part; the tasting, on the tongue; the refreshing (or that makes contented), in the head; the conjunctive or uniting, resides in every juncture (or joint).

The characteristic signs of the above-specified humours—that of wind; roughness, lightness, cold, smallness, hardness, and mobility.



That of bile ; unctuousness, sharpness, lightness, foulness, depuratory moisture.

That of phlegm : unctuousness, coolness, heaviness, and dulness, softness, or gentleness, steadiness, adhesion, passionateness.

*6th Chapter.*—On the works or action of the body. These are the body, the speech, and the mind. Virtue, vice, and undetermined cases. The five organs occupy their own place. The body is divided into basis (ground or support), age, nature (or constitution), division of diseases. The basis has a triple division. Age also has the same number ; that of nature or native disposition, has seven. With respect to disease, the distinctions are : indisposition and absence of morbid state.

*7th Chapter.*—On the tokens of destruction (or approaching death) of the body : 1. Tokens of a far distant death. 2. Ditto of a near one. 3. Uncertain, and 4, Certain tokens of death. Distant tokens are : any envoy (of death), dream, and change (by age), &c. ; the near tokens are distinguished into near and very near. Uncertain tokens ; as, when after recovering from a sickness, one may live yet many years. Certain tokens, as, when the disease is incurable.

A physician should be well acquainted with the tokens of death ; that he may know whether the patient be curable or incurable, and to perform his medical service accordingly.

*8th Chapter.*—On the increasing and decreasing state of sickness. Here is treated of the causes and accessory causes of the disease ; the manner of its origin ; the diseased part ; the character and distinctions of the importance of each.

First. The causes are proximate, and remote.

*9th Chapter.*—There are three accessory causes that depend on the primary cause : the originating and spreading, the gathering together and arising ; and the taking away of the disease.

*10th Chapter.*—On the manner in which any disease takes place in the body.

*11th Chapter.*—On the character of diseases ; as, an increasing, diminishing, and a perplexed, disease. The causes of which are to be sought in the too great or too small quantity of the three humours, of the seven supports of the body, and of the fæces.

*12th Chapter.*—Division of diseases ; with respect to the cause, the individual, and the kind of disease. With respect to the cause : this is attributed to the vicious three humours of this life ; to the consequence of immoral actions in former generations or lives, and to a mixture of both. With respect to the individuals : they are, man, woman, child, old persons ; and men of every description. The several diseases peculiar to each are enumerated. The number of the kinds of the common diseases is stated to be 404, which are divided or distinguished out of several respects. As with respect to the vicious humours, principal humour, place or injured part, and the kind of disease, 42 belong to wind, 26 to bile, 33 to phlegm. Thus with respect to the humours, 101 divisions are made, and so on ; with respect to the other points also, many distinctions or classifications are enumerated, each amounting to 101.

*13th Chapter.*—With respect to the conduct. What course of life is to be taken, (to be free from disease :) 1. continually, 2, at certain periods, and 3, occasionally, or as circumstances may require. The two first are treated in the

next two chapters: 1, continually to be done are: worldly affairs and religious exercises or occupations; first, the leaving off every immoral action committed by the body, speech, and the mind; and the doing of such things as are agreeable to these, in every circumstance of life: as in eating, walking, sitting, mounting a horse, sleeping, &c.

2, Religious occupations are the exercise of moral virtues, and the desisting from the ten immoral actions.

*14th Chapter.*—On the periodical conduct of life, according to the different seasons, (as the first and last part of winter, the spring, the hot season, summer, and autumn;) with respect to diet, exercise, medicine, and chirurgical operations.

*15th Chapter.*—On the circumstantial conduct of life, with respect to several cases, teaching that, one should not obstruct hunger and thirst (or abstain from meat and drink); not hinder yawning or gaping, sneezing, breathing, coughing, (or ejecting phlegm,) spitting, sleeping, nor any of the natural discharges, since the obstruction or hindrance of them may give rise to any disease, of which several cases or examples are enumerated.

*16th Chapter.*—The manner of using meat and drink: 1. The several kinds of food, and the manner of using them. 2. Several kinds of food that do not agree, and therefore may not be used together. 3. Temperature to be observed.

For food are used, grain (or corn), flesh, butter, vegetables or greens, and dressed victuals. There are two kinds of grain: 1, growing in ears, and 2, in pods (as pulse). Flesh or animal food of eight kinds or sorts. Several kinds of unctuous or oily substances; as, butter, oil expressed from grains, kernels, fruits, berries, and trees or shrubs; grease, fat, marrow, &c. To vegetable or green things belong potherbs, &c. To dressed victuals or meals belong boiled rice, soup, &c. Drinkable things are milk, water, wine, &c.

*17th Chapter.*—Enumeration of several kinds of food that it were dangerous to take together; as, fish and milk, &c.

*18th Chapter.*—On the proper measure of food to be taken, or on temperance in meat and drink.

*19th Chapter.*—On pharmacy, or the preparing of medicaments for healing any disease. Taste of medicament, efficacy, digestive quality, mode of composing, &c. appropriate to any specified disease.

*20th Chapter.*—On *materia medica*, the efficacy of every simple medicament. The materials for medicaments are: precious and natural stones, earths, woods, vegetables, and those obtained from animals. In the text, and in another quoted work, 915 articles are enumerated, and stated of each to what disease it may be applied especially, as a remedy.

*21st Chapter.*—Specification of the classes of medicaments; their preparation and application to specified diseases.

*22nd Chapter.*—On the five sorts of (chirurgical) instruments, employed in trying or sounding any disease, in cutting, &c.

*23rd Chapter.*—That one may remain in health and ease, rules are prescribed to be observed.

*24th Chapter.*—Discrimination of the humours as the cause of any inward or outward disease.

*25th Chapter.*—When the former are insufficient, it is taught, to seek it in the vicious inclination of the mind.

*26th Chapter.*—To exhibit medical help, when the disease may be healed; and to give it up, when it cannot be cured.

27th Chapter.—On the manner of curing diseases. How? by whom? with what? The measure or length of time of curing.

28th Chapter.—Detailed description of the curing of diseases.

29th Chapter.—Common and peculiar mode of curing diseases.

30th Chapter.—How to cure wind, hile, phlegm, is separately exposed or taught.

31st Chapter.—The requisite qualities in a physician, that he should be well acquainted with the theory and practice of medicine; and be an impartial, upright, good-hearted man.

### THIRD PART.

*Containing a full explanation of Diseases.*

Chapter 1. Exhortation to the teacher (SHA'KYA) to deliver a treatise (ཐུང་) or oral instruction on the manner of curing diseases.

2. The curing of diseases arising from wind (or windy humours). There are five distinctions: 1, causes; 2, accessory cause and effect; 3, division; 4, symptoms; 5, manner of curing (diseases arising from wind).

3. In the curing of diseases arising from (or caused by) hile, there are the following distinctions: 1, cause; 2, accessory cause and effect; 3, division; 4, symptoms; 5, manner of curing; 6, and stopping or hindering its progress.

4. In the curing of diseases caused by phlegm (or phlegmatical humours), are considered: cause, accessory cause and effect, division, symptoms, and manner of curing.

5. In the curing of diseases caused by the gathering together of the three humours (wind, hile, phlegm,) and of blood, there are the following distinctions or considerations: cause, incident or accessory cause and effect, place, time, kind or genus, symptoms, manner or mode of curing, and the stopping of it for the future.

6. In the curing of indigestion, the root (or primary cause) of inward diseases, there are the following distinctions or sections: cause, incident or accessory cause and effect, manner of its arising, division, symptoms, remedy or mode of curing.

7. In the curing of a swelling (or a hard conglomeration or excrescence), there is treated of: cause, incident, division, place, manner of arising, symptom, mode of curing it.

8. The curing of white swellings, a kind of dropsy. Here are considered: cause, incident, division, symptom, mode of curing.

9. In the curing of another kind of dropsy (འཛིན་ཐི་ནད་) there are the same distinctions as before.

10. The curing of dropsy is taught, by exposing the cause and incident, division, manner of arising, symptom, mode of curing, stopping or cessation.

11. In the curing of phthisis or consumption of the lungs, ཐུའ་མེད་ཆེན་པོ་ནད་ཐུང་པ་, there are the following distinctions: cause, and accessory cause or effect, division, symptom, mode of curing. And thus there are six chapters on curing inward diseases.

12. In curing feverish diseases (where heat prevails) in general, there are the

following distinctions: cause and incident, nature, name, symptom, mode of curing.

13, 14. Farther explanations on the causes of the heat and cold, in fever.

15. In the curing of a fever, in its beginning, or where heat has not yet taken the upper hand, there are enumerated the following distinctions: cause and incident, nature, name, division, symptom, mode of curing.

16. In an increased or burning fever, the same distinctions are as before, except a trifling division.

17 to 20. On curing several kinds of fever, such as are: the sly, hidden, inveterate, and the mixed ones.

21. The curing of inflammation of any hurt or wounded part of the body, with several distinctions; and that of inward and outward hurt: the inwards are, the viscera and the vessels; the outward parts are, the flesh, bone, marrow, tendon, and fibre.

22. The curing of heat or fever (arising from the contest between wind, bile, and phlegm), in which the mental faculties are troubled, with several distinctions to be considered; and so there are 11 chapters on curing fever (heat and inflammation).

23. On curing epidemic maladies or infectious diseases, with several distinctions and divisions; as, བུ་ཁྱ་ན་པ་ a kind of pestilence of Nepal.

24. On curing the small-pox: cause and effect, definition of small-pox, distinction, symptom, mode of curing; distinction into white and black variolæ, each having three species.

25. The curing of infectious diseases affecting the bowels (colic), with several distinctions; purging the viscera and the lower vessels, affecting with greater or less vehemence; and so there are eight kinds of diseases affecting the bowels.

26. The curing of swellings in the throat (or of ulcers and inflammations), and infective diseases, as the cholera, ཇུ་ཇུ་ལྷ་རྩ་དང་སྤྲེལ་ཇུ་ལྷ་: the first has 4, the second 11, subdivisions, or minor distinctions.

27. With respect to catarrh, are considered: cause and incident, kind, symptom, mode of curing. And so are five chapters on infectious diseases, རྩ་མཁའ་ན་པ་, to which belongs the cholera morbus also, ཇུ་ཇུ་ལྷ་རྩ་དང་སྤྲེལ་ཇུ་ལྷ་.

28. In curing the upper part of the body, the head occupies the first place. Here are considered: cause, circumstantial accident, distinction, symptom, mode of curing. There are eight distinctions, as wind, &c.

29. In curing the diseases of the eyes, are considered: cause, incident, division, symptom, mode of curing, with 33 distinctions of ophthalmic diseases.

30. Diseases of the ear; cause and incident, or accessory cause and effect, division or distinction, symptom, mode of curing. Distinction into disease of the ear, and deafness; that has six, this four, kinds.

31. Diseases of the nose: cause and incident, division, symptom, mode of curing; there are five divisions or distinctions.

32. In the curing of the diseases of the mouth, there are to be considered: cause and incidents, division, symptom, mode of curing. There is a six-fold division; as, the lip, the gum, &c. There are several distinctions of diseases, as six of the teeth; five of the tongue; six of the palate, and seven of the throat.

33. In curing the diseases of goitre or swelling in the fore-part of the neck, are considered: cause and incident (or accessory causes), distinction, symptom, cure



or remedy. There are eight sorts of goitre, as those arising from wind, bile, &c. Thus six chapters are on curing diseases in the upper part of the body.

Now follows the curing of diseases affecting the viscera, and the entrails or vessels.

34. In curing the diseases of the heart, there is treated of: cause and incident, division, symptom, and remedy. There are seven distinction of diseases in the heart; as the throbbing or palpitation of the heart རྩིང་འཕྲུལ་, &c. &c.

35. In curing the diseases of the lungs are considered: cause, division, symptom, remedy. There are eight distinctions of diseases.

36. In curing the diseases of the liver, are treated of: cause, division, symptom, remedy. There are 18 distinctions of diseases.

37. In curing the diseases of the spleen or milt, four things come into consideration. There are five kinds of diseases, as inflammation, &c.

38. In curing the diseases of the reins or kidneys, there are four considerations, with seven kinds of diseases; as wind in the reins, &c.

39. In curing the diseases of the stomach, or the pit of the stomach, there are likewise four things to be previously considered. And first, 16 kinds of diseases, as heat, cold, &c. and again five kinds, as wind, &c.

40. In curing the diseases of the intestines or bowels are considered four things, as cause, &c. with the distinction of five kinds of diseases.

41. In the curing of the gut of the entrails or bowels, are considered: symptom and remedy, with five distinctions of diseases; as cold, puffing up, &c. Thus eight chapters are on curing the diseases of the viscera and vessels རྩིང་ཕྱུང་.

Diseases of the privy parts.

42, 43. In these two chapters for male and female cases are considered: cause, &c. four, with nine and five distinctions of disease respectively.

This class of disorders is called བུ་ལྷ་ཤིང་ (secret disease).

The curing of little diseases (ཐོ་ཤིང་).

44. In the curing of hoarseness, or difficulty of using the voice, are considered: cause, incident, &c. four, with seven distinctions of diseases; as wind, &c.

45. In curing aversion from food, or restoring the loss of appetite (ཡི་ཤ་འཕྲུལ་) there are considered: cause, &c. four; with four distinctions of that disease.

46. In curing the distemper of continual thirst, are considered: cause and incident, &c. four, with five kinds of that distemper; as wind, bile, &c.

47. In the curing of the hiccup, the disease of yexing (convulsion of the stomach རྩིང་འཕྲུལ་ཐུག་པ་), are considered: cause and accident, &c. four, with five distinctions of that distemper; as from meat or food, &c.

48. The curing of the difficulty of breathing: cause, &c. four; with five minor distinctions.

49. The curing of a sudden cholera, (ཐུང་ཐུང་, a distemper of the bowels,) are considered: cause and accident, &c. four; with three principal, and eleven minor, kinds of that distemper; besides some others that are enumerated, as heat and cold; worms and phlegm, &c.

50. The curing of diseases arising from worms (in the belly or bowels:) and insects, are considered: cause and accidents, &c. four, with two distinctions inward and outward worms or insects; as belly worms, lice, and nits.



51. In curing vomiting, are considered: cause and accidents, &c. four, with four distinctions of that distemper, as wind, &c.

52. In curing purging diseases (or dysentery), are considered: cause, &c. four, with four distinctions of that distemper, &c.

53. The curing of obstruction of stools, or of evacuation, four things to be considered, and five kinds of that distemper are enumerated.

54. In curing dysury (or difficulty of making urine), is treated of the cause and accidents, &c. four, with several distinctions of the kinds of that distemper.

55. In curing the frequent discharge of urine; cause, &c. four, with the three kinds of that distemper, arising from phlegm, bile, and wind; phlegm has again 10 distinctions.

56. In curing the disease called the "Indian heat," (very dangerous to Tibetans, by causing excessive heat and frequent evacuations, of which many die who visit India,) are considered: cause, &c. four, with four distinct divisions of that distemper.

57. In curing the swelling or enlargement of the feet, are considered: cause, &c. four, with four distinctions of that disease.

58. In curing the gout ལྷུ་མ་བྱུ་ are considered: cause, &c. four, with six distinctions of that painful distemper.

59. In the curing of diseases arising from the serum or watery parts of the blood (རྩ་སེར་ yellow water, bad or corrupt humours), are considered: the manner of its origin, its division, symptom, mode of curing, with several distinctions.

60. The curing of the disease called "the white vein," རྩ་པ་ལྷུ་ with several divisions and distinctions.

61. The curing of cutaneous diseases. Of these there are several divisions and distinctions.

62. The curing of miscellaneous diseases of the smaller kind: such as contraction or sinking of the sinews; dysentery; vomiting; any hurt caused by fire; hurt or wound made with a needle; or when a needle or the iron-point of an arrow happen to be swallowed; choking or suffocation; on the stopping of any thing in the throat, as, a beard of corn, bone, fish-prickle; the entering or swallowing in of a spider or scorpion; intoxication; stiffness of the neck; ill smell of the body; hurt of the hands and feet caused by cold and snow; the creeping of any insect into the ear; the swelling of the teat of a woman. The curing of all such diseases is called the cure of small diseases. Thus there are 19 chapters on minute diseases.

The healing of wounds, sores, or ulcers.

63. The curing of ulcers (འཕྲུག་) here are considered: cause, &c. four, with several distinctions.

64. The curing of the hemorrhoids (piles or emerods in the fundament, བཞུང་འཕྲུག་) cause, &c. four, with six distinctions.

65. The curing of St. Anthony's fire, (any swelling full of heat and redness, མེ་དབུ་) cause, &c. four, with several distinctions, and the places (or parts) where generally they occur.

66. The curing of the Surya disease (ཡུའ་ཡེ་ནད་) affecting the lungs, liver, &c. its beginning, &c. four, with some distinctions.

67. The curing of cancerous or virulent bad sores or ulcers: cause, &c. four, with eight distinctions.

68. The curing of the swelling of the testicles (རྩེད་ལྷ་མུ་མུ་) : cause, &c. four, with six distinctions.

69. The curing of a disease in the foot and thigh, called Kángbám, (ཁང་འབྲུག་) or enlarging and corruption of the feet, &c. a painful disease in the bones, accompanied with inflammation, and blue colour of the skin : cause, &c. four, with several distinctions.

70. The curing of the ulceration in the perincum : cause, &c. four, with some distinctions.

71. The curing of diseases incident to infant children, with the description of several superstitious customs or practices which are performed at the birth of a child, as examination of the time at which it was born, whether it is lucky or unlucky ; imparting of the benediction ; the cutting of the umbilical cord ; the making it live long ; the making it suck, the time, &c. &c.

72. The enumeration of several diseases common to infants and children : cause, &c. four, and the mode of curing them.

73. The curing of diseases caused by any (supposed) evil spirit, 12 kinds of such diseases : symptoms, and remedy.

Thus three chapters are devoted to the diseases of infant children.

Then follow, on curing the diseases of the female sex. These distempers are thus distinguished : general, peculiar, and vulgar, or common.

74. On curing the diseases of the female sex, in general, are considered : cause, &c. four, with two distinctions, originating in the blood and wind.

75. The curing of the particular diseases of women : cause, &c. four, with many distinctions ; as with respect to the several humours, of which they arise.

76. The curing of the common or vulgar diseases of women, with the circumstances of child-birth.

On curing diseases caused by evil spirits.

77. The curing of diseases caused by a ghost (or evil spirit), of which there are 18 kinds enumerated, from among the Suras and Asuras. Here are considered : cause and incident, division, symptom, and remedy.

78. The curing of insanity or madness : cause, &c. four, with seven distinctions, as it is caused by wind, bile, &c.

79. The curing of a kind of insanity called " forgetfulness " (lunacy ?) enumeration of its several kinds, the symptoms, and the remedies.

80. The curing of palsical diseases, and the telling of the periodical time of their occurrence, the symptoms, and the remedies for preventing their recurrence.

81. On the curing of diseases, in which the body is infested with cancerous ulcers, is eaten away and dissolved : considered cause, &c. nine, with 18 distinctions respecting its different kinds, and the places (or parts) which are generally affected.

The above five chapters are on such diseases as are supposed to be caused by the influence of some malignant demon.

82. On the curing or healing, in general, of wounds, made by any kind of weapon or tool. Here into consideration come ; 1, cause ; 2, accessory cause or incident ; 3, nature (of wound) ; 4, definition or description (of the wound) ; 5, its name ; 6, place ; 7, division ; 8, symptom, mode of curing or remedy, excision or cutting out, cicatrizing.

83. The curing of wounds on the head, here are considered : the manner of its being, examination of the injured part, manner of curing, recovering, or being overpowered. (ལྷ་ལྷ་ལྷ་ལྷ་)

84. The curing of wounds on the neck or throat, where the bone, vein, or nerve, and the tendon or sinew come into consideration.

85. The curing of wounds on the upper and lower parts of the thumb of the body; manner or that of being; symptom, remedy, healing.

86. The curing of wounds on the hanging members (arms and legs), the knowing the importance or consequence of, &c. symptoms in general, mode of curing, or restoration.

Thus four chapters were on curing wounds; henceforth the curing of poison, or the remedies against poisoning.

87. The curing of injuries caused by artificial or prepared poison. Here are considered: the kind of poison, entrance or infection; quality, the manner of its spreading or prevalence; remedies employed, final cessation or remains.

88. The curing of simple poison, and of poison in the flesh. With respect to the first: cause, symptom, remedy; in the second case, two points more come in consideration.

89. The curing of real or material poison. Two cases: 1, spreading; and 2, not spreading. (ཐྱུ་བ་དང་མི་ཐྱུ་བ་)

These three chapters were on curing injuries caused by poison.

90. On curing the weakness of old age, or procuring strength to weak, old men. Emoluments, place, recourse to, remedy.

91, 92. On the means of increasing the power or vigour in men.

Here ends the summary extract of the 92 chapters, on the instruction of curing diseases.

#### FOURTH PART.

*Which contains the explanation of the practical part of Medicine.*

*Chapter 1.* The examination of the pulse, wherein 13 cases are enumerated on the character of the distemper.

2. The inspection of urine, wherein, as it is said, the vicious state of the whole body may be seen, as in a mirror.

Thus two chapters are on examining the pulse and urine.

Afterwards, when the character and name of the disease has been found out, what sorts of medicaments are to be administered, is exposed.

3. First liquid medicines, of which there are 51 for curing inward heat, and 23 for assuaging cold fits or ague. Together there are 77 sorts of liquid medicine. When by these there is no remedy, further is an

4. Enumeration of powdered medicine, or medicaments in powder, of which the mixture is stated to amount to 96, for assuaging the heat of any distemper; and 69 against cold fits. Both together=165. When they afford no relief, there is taught of another remedy,

5. Physic or medicaments in pills, of which the different kinds of mixture amount to 22.

6. The several kinds of sirup, (a kind of mixture) are described or taught, of which 15 are for assuaging heat, and five against cold fits. Both together=20.

For procuring strength to the body, and for drawing out an inveterate disease.

7. Is taught of a mixture, called medicinal butter (མཚན་མའ) consisting of

several ingredients, of which there are 14 sorts for curing heat, and nine for taking away cold fits. Both together = 23.

8. 13 kinds of mixture of calcined powder, for curing an ague caused by a too much abundance of phlegm.

9. 17 kinds of mixture or syrup, especially for the purpose of assuaging heat.

10. 19 species of mixture of medicinal wine (or spirituous beverage), are enumerated, for curing diseases, in which wind prevails.

11. A mixture, as a remedy against any inveterate malady whatever, prepared of precious stones, for curing the diseases of princes, and of opulent men. One against heat, and 11 against cold; eight against both; together=20.

Since men, in general, cannot have precious stones required for such a mixture for curing diseases, in the

12. Is taught of such vegetables or plants that are procurable by all, of which the several mixtures amount to 28 for curing heat; and 14 for assuaging cold fit.

Thus taking together all assuaging remedies from the liquid to the vegetable medicines, there are 418. So much of the assuaging remedies. When they are insufficient, in the

13. Is taught of purging or deparatory medicines in general.

14. Of purging medicines operating downwards, for carrying away corrupt blood, bile, and the relics of other diseases. There are three kinds of such purging (or deparatory,) medicines, operating: gently, moderately, and strongly; of which all there are 82 species.

15. For carrying upwards or ejecting the remains of such diseases, as belong to the phlegmatical kind: here vomits are prescribed, of which there are eight of the stronger, and eight of the gentle kind, both=16.

16. A composition of medicine, for cleansing or purging the nose, five of the gentle, and two of the strong kind.

17. Elixirs or extracted juices, for drawing downwards the diseases in the entrails or intestines and guts.

18. The same continued and specied.

19. Elixirs or mixtures for cleansing the veins, (or deparatory elixirs for do.) Thus seven chapters are on deparatory medicines.

If by the above means there is no sufficient relief, in another sutra is taught of other soft and hard remedies.

20. How to let blood in such distempers, when heat prevails. There are counted 77 veins, of which any may be opened for letting out blood.

21. The application of a caustic for curing diseases, when cold, or cold fits prevail.

22. The use of a venomous mixture.

23. On the use of medical bath, for diseased members.

24. On adhibiting medicinal unguents.

25. On medicines operating downwards.

26. The conclusion. Though there be many ways (1,200) of examining the heat and cold prevailing in any disease, they all may be reduced to the following: to look on the tongue and urine, to feel the pulse, and to ask (after the circumstances of the beginning and progress of the disease in question.)

Thus the remedies adhibited against diseases, though they be counted many (1,200) yet they may be reduced to the following four classes: medicament, manual operation, diet, and exercise. Medicament is either assuaging or deparatory;



the manual operation, is either gentle or rough; food is either useful or noxious; the exercise is either violent or gentle.

Again: though there be numbered 360 practical modes of curing diseases, they may be reduced to these three: examination of the patient (or of the symptoms of the disease). Rules for curing such and such disease. And the manner in which the remedy is applied.

There is taught also of preservatives for a physician, to keep himself safe from any malignant infection from a patient.

27. Recommendation of this treatise to the care of the audience, by the teacher, (SHAKYA.) Classification and moral application of the above enumerated 404 diseases.

The volume concludes with an account of the mode in which this treatise on medicine (consisting of four parts) reached Tibet, which is briefly incorporated in the introductory remarks.

II.—*Journal of a Tour through the Island of Rambree, with a Geological Sketch of the Country, and Brief Account of the Customs, &c. of its Inhabitants.* By Lieut. WM. FOLEY.

[Read at the Meeting of the 2nd Oct. 1834.]

The Island of *Rambree*, or *Yamawaddi*\* as it is termed by the Burmas, is not without those features common to the whole of Arracan. The same high land, covered with a thick and impenetrable jungle, every where presents itself to the view of one approaching the coast; and the eye strives in vain to discover a diversity of feature in some cleared spot, which would indicate the existence of a cultivation only to be found in the interior of the island. It was with the view of throwing some light upon the geology of *Rambree* that I prepared this Journal for transmission to the Asiatic Society; a consciousness of my present superficial information on many points connected with the geology of the island would have induced me to reserve this communication for a more favourable opportunity, was I not apprehensive that such a season would never arrive, and that the little leisure I now have at my disposal must of necessity be devoted to duties of a

\* In the year 1148, Mugh series, two years subsequent to the conquest of the country by the Burmas, Arracan was divided into four distinct provinces, each subject to a separate jurisdiction. They were termed thus, 1. *Dwynawaddi* (Arracan Proper). 2. *Yamawaddi* (Rambree Island). 3. *Megawaddi* (Cheduba). 4. *Dorawaddi* (Sandoway). The proper name for Cheduba is *Ma'ong*. The word Cheduba must have been introduced by the Bengalís, I fancy, for it is unknown to the Mughls. The same may be said of Akyab, which should be called *Chetówa*.

[*Rámávati*, *Meghávati* and *Dvárávati*, in Sanscrit. See translation of an Inscription in vol. iii. page 209, 213.—ED.]



professional nature. To a brief geological description of the island, I have added such other matter connected with the condition, and manners of the inhabitants as appeared deserving of mention, either from its novelty, or the value it may possess in the scale of utility.

With respect to the geology of *Rambree*, I fear there will be found little that is new or interesting; the rocks that have been hitherto observed are chiefly of the newest kind, or owe their origin to volcanic agency: these with the alluvial and diluvial deposits will be found to cover the greater part of the island. Several mountainous ranges occur in *Rambree*, and their general direction appears to be from N. N. W. to S. S. E. The elevation of these above the plain is not very great, varying from 500 to 1500 feet for the principal extent, and not exceeding 3000 feet at the highest point. Other smaller hills are seen to branch off from the larger ranges, forming those basin-like cavities that afford space for the rice cultivation.

Commencing with *Khyouk Phyoo*\*, situated on the N. W. point of the Island of *Rambree*, I shall proceed from thence along the western coast, passing in gradation to such other places as I may have visited, or have become familiar to me from the report of others.

The military station of *Khyouk Phyoo*, which takes its name from a village distant three miles from the cantonment, stands upon the verge of a low sandy plain, which extending from the south towards the sea and harbour is bounded on the S. W. by a low sandstone range, and on the E. by a small creek, which separates it from the rich alluvial ground that lies at the base of the *Nagadong* and *Oonkyoung* hills. Upon the surface of this plain there exists a vegetable mould not exceeding four inches in depth, and this is succeeded by a bed of sand and shingle; the sand in some instances assuming a grey or greenish appearance, and the shingle in every respect similar to that found upon the beach. At the village of *Townyeen*, in front of the parade, a chalybeate spring is supposed to exist from the presence of carbonate of iron;—the sand in this place has a ferruginous aspect, but the space occupied by it is very limited, the ochre appearing at the surface, and invariably succeeded by the grey sand above alluded to.

As has been already observed, a sandstone range extends itself on the S. W. side of the cantonment. There are in fact two ranges running parallel to each other, the interval being taken up with patches of rice cultivation; and both are connected with the reefs extending under the sea to the N. W. and marked off by the *Reef Buoy*. Taking a direction to the S. E. they are terminated abruptly on the margin of the creek which bounds the station of *Khyouk Phyoo* on

\* *Khyouk Phyoo*, White Stones, (Shingle.)

that quarter. The structure of both is alike throughout; the sandstone occurring in large disintegrated masses, rounded by the weather, and loosely embedded in the argillaceous soil that forms the surface of these hills. Here and there some appearance of stratification is observed; the sandstone dipping to the S. W. at an angle of 75 or 80°. This order of stratification is most perceptible on the sea beach, where the ranges in question are united with the reefs. The sandstone is here of a grey colour, of a somewhat laminar structure, and in some places so much decomposed by the action of the water as to approach the nature of an aluminous schist. Progressing with the range, it assumes a brown or yellow colour, is of a fine texture, and occasionally interspersed with minute scales of mica. The surface of these hills being composed of a stratum of clay, the ground at their base is continually receiving a deposit of the same nature, affording opportunities for cultivation, and forming a striking contrast with the soil in the immediate vicinity of the cantonment. This alluvial deposit sometimes attains to the consistence of a yellow clay, sufficiently plastic for the fabrication of bricks and earthen vessels. Beyond this sandstone range, and bordering upon the village of *Khyouk Phyoo*, the ground is still of that low diluvial nature which indicates the transition it has undergone; in some places, intersected by narrow creeks accessible to the tide, and every where covered with a thick jungle of mangroves and marine plants. At the village of *Khyouk Phyoo* there occurs an isolated hill, composed entirely of a soft grey sandstone, which had once formed part of some continued range, and was subsequently torn asunder by the sea on its retiring from the island; it is one of the many instances that may be observed in *Rambree* of the denudating effects of the waters of the ocean at a period that they were subject to some violent commotion, produced probably by the sudden rise of mountains from beneath.

January 12th, 1834.—Leaving *Khyouk Phyoo* at an early hour, and proceeding along the beach with the Saddle and Knot Islands on the right, my route lay towards the villages of *Membraan* and *Kyoprath*; loose blocks of sandstone, rounded by the sea, and apparently forming part of an under-stratum, extending to the *Saddle* and *Knot Islands*, cross the beach in several places for the first few miles of the road. The sandstone is of a grey colour, soft, gritty, and frequently intersected with veins of calc-spar; I observed crystals of iron pyrites on the surface of some of these stones, and red spots on others, perhaps the result of aqueous deposition. The sandstones in Arracan appear to contain much iron, in different stages of oxidation.

Still following the sea-shore, at the base of a long sandstone range, whose utmost elevation above the plain cannot exceed 300 feet, I passed the village of *Membraan*, the locality of some old Petroleum wells, which I am told no longer afford a sufficient supply of oil to induce the working of them. From *Membraan* to *Kyouprath*, the road lay along a beautiful beach, covered with a fine yellow sand and shingle. I observed the prints of tigers' feet in several places on the route, and in this place they were particularly numerous. From the circuits the animals had made on the beach, they would seem to have been sporting with each other by the moonlight; a thing not unusual with the male and female of the Feline species during the season of love. The ground on the left was higher and more open than it had hitherto been on the road, and covered with a fine green sward. Beyond me was the village of *Kyouprath*, prettily situated on an eminence over the sea-shore, and at no great distance in its rear, the range of sandstone hills, between which and the village I observed a few acres of paddy ground. The hills were in some few places cleared of the forest and underwood, and presented small patches of open ground devoted to the cultivation of cotton. It was near 10 o'clock when I reached *Kyouprath*, and as my elephants were tired, and it was getting warm, I was not unwilling to make a halt at the place for the remainder of the day. After selecting a spot for the elephants, my next care was to seek quarters for myself; and for this purpose, I requested the villagers, who had already assembled to have a near view of the *Inglee*\*, to direct me to the house of the *Rovagony*, or head-man of the village. After my request had been several times repeated, before it was understood, I at length found myself seated in his house. The *Rovagony* was at work in the field, but his wife, a cheerful-looking woman, was present, and very kindly gave me a mat to lie down upon, some fire for my cheroot, and a fowl for my curry, on the assurance that full payment should be made for every thing received. I fell asleep upon the mat, and did not rise until the sun was nearly down, when I took a stroll upon the beach, and bathed in the sea. A few blocks of sandstone, and a conglomerate, consisting of a paste of sandstone, with enclosed nodules of a calcareous earth, lay upon the beach; some of these rocks had a scoriated appearance, were encrusted with crystals of iron pyrites, and bore evident marks of igneous origin. Returning to the village, I sat down on the green, to witness a wrestling match between two young Mughls. This is a game that they are very fond of, and I have never seen better wrestlers among any race of people. The vigorous frame

\* *Inglee*, Englishmen, general term for an *European*.

of the combatants promised a treat of no ordinary kind, and I was not disappointed ; it was truly astonishing to witness the dexterity of the parties in their endeavours to throw each other. The struggle was long and violent, ere it was terminated by the fall of either party ; it was impossible, however, that both should be declared conquerors, one poor fellow was thrown, and fairly held down at the mercy of the victor. One of my Malhouts, a great stout man, and a native of Chit-tagong, was present, and had the impudence to speak lightly of the science. He was immediately challenged by a young Mugh, who was far his inferior in size, as well as age. They wrestled, and the Mahout was thrown, once—twice—and three times, to his very great confusion, and the chagrin of his *caste*. Boxing, wrestling, and the *Keelôme*, are among the favourite amusements of the Mughhs. The latter game is not unlike our “battledore and shuttlecock,” with this difference, that the ball, which is hollow, and made of cane, is impelled into the air by the foot, instead of by the hand. Half a dozen young men form a circle, and it is the aim of each individual, towards whom the ball falls, to keep it up in the air as long as he can ; not only the foot but the knee is brought into action, much dexterity is displayed, and he that keeps the ball up longest is entitled to the greatest credit. In addition to the games of more general occurrence, the Mughhs, like the rest of their neighbours, have their own peculiar festivals, and modes of celebrating them. The principal of these are—

1. *Sangrain-Kyadeh*\*.—This occurs in the month of *Tagoo-la*, (April,) at the commencement of the new year, and during this season, the games of *Reh-loundee*, and *Léh-prinedee* are held. The former very much resembles what is observed in our own country on New-year's-day. The women throw water over the men, who generally return the compliment ; no distinction is paid to rank. The water is thrown indiscriminately, and with an unsparing hand, upon high and low, and all seem determined to enjoy a season that permits of such unlimited freedom. The *Léh-prinedee* is the boat-race, which is held at the same time : a number of boats assemble in a broad creek, and start for a certain place, each striving to outstrip the other. The boats are impelled with oars, and those that are light and well manned, have a surprising speed upon the water. The shouts of the rowers, the strains of wild music, and the gay appearance of the boats

\* The whole of these festivals owe their source to some fabulous narrative, preserved in the sacred writings or other books, and religiously believed by an ignorant and superstitious people. I regret that I am, from my very imperfect acquaintance with the language of this country, debarred an opportunity of transcribing any part of these.



decked out at the stem with branches of plantain trees and garlands of flowers, give a most pleasing and striking effect to the scene. Returned to the place from whence they started, a donation in money, or a piece of silk, is generally presented to the winner by the master of the ceremonies. Nautches and entertainments succeed the boat-race, and the festivities are closed with offerings to the priests and the *Rautoo*\*, who is on this occasion carefully washed and adorned.

2. *Oobho-chounde*.—This festival is held in the months *Wajho*, (July,) *Wagoung*, (August,) *Tantha-leng*, (September,) and *Sadyne-Kyot*, (October.) The people fast for a few days in each month, and proceeding to the *Kioums*†, dressed in their smartest attire, prostrate themselves before the *Phraa*‡, and make suitable offerings to the priests.

3. *Wingbauh-pôe* occurs in the month *Sadyne-Kyot*, (October.)—By way of celebrating this festival, a labyrinth is constructed by means of bamboo fences, so placed, as to make the path very narrow and intricate from the numerous turns it takes. People of both sexes, and of all ages, flock to this place in the evening, dressed in their smartest clothes; old as well as young thread the labyrinth, enjoying the fun that is occasioned by their several mistakes in endeavouring to get out of it. A temple is erected in the centre of the labyrinth, and within it are four images of the Buddha saint, to which the passengers severally make obeisance, placing small lamps upon different parts of the building for the purpose of illumination. The evening of each day generally closes with a display of fire-works, and the *Bouthséy*, a ludicrous dramatic representation, very much resembling the *Putlé* of India. In addition to the above, a ceremony, termed the *Puddéysah*, is performed during the month of *Sadyne-Kyot*. This consists in the construction of a frame-work, intended to represent a tree, which is carried about upon the shoulders of the people, and upon it are hung such bequests as are made by individuals, in the shape of cloth, silks, dishes, &c. the whole of which are intended for the use of the inmates of the *Kioums*. Much is collected in this manner, it being considered highly meritorious to make even the smallest gift on this occasion. The procession is generally accompanied by dancers and musicians, whose services are wholly gratuitous; for whatever they may individually collect, is, in like manner, devoted to the necessities of the *Kioum*.

4. The *Ruttah-bóeh* is held in the month of *Taboo-dwar*, (February,) when the cold weather is supposed to have ended. A small tree is placed upon a car that had been constructed for the purpose, and to each end of this vehicle ropes are attached. The people assemble at the place from all quarters, and two parties (generally selected from

\* Image of Gautama.

† Monasteries.

‡ Gautama.



the inhabitants of two neighbouring villages) are formed for a trial of strength : one party pulling against the other. The successful party is allowed to draw the car away to their own village, where it is finally consumed.

Several other wrestling matches were made, until it became too dark to prolong the game. I now returned to the village, and entering my host's house, found a supper waiting my arrival. It was laughable to observe the curiosity of the villagers to see an *Inglee* at the *feeding hour*. Men, women, and children mounted the *michaun*, to the very great hazard of its coming down. There was in the appearance of my visitors nothing of that fear and abject submission so characteristic of the natives of India. The women, as well as the men, stood gazing upon me, and all joined in the laugh excited by the European mode of handing the food to my mouth, to them so incomprehensible and ridiculous. The children were not afraid to approach, and I was not so uncivil as to refuse them a share of the viands they apparently coveted. It was received with pleasure, and offered in return to their parents. A mother had a very pretty infant at her breast, and I was surprised to see her give it a piece of bread that had been previously chewed. I found on inquiry that a child is fed with a mouthful of boiled rice, reduced to a state of mucilage, on the second day of its birth. This it is said conduces to its vigour, and hastens the period for its final separation from the breast.

January 13th.—The sun had not risen before I was seated on my elephant, and setting out on my journey to *Ladong*. Leaving *Kyouprath*, and proceeding towards *Kaeng*, the route at first lay along the sea-beach, and afterwards over a rugged piece of ground, covered with blocks of sandstone and a conglomerate, which appear to have been borne down from the superincumbent hills, by the violence of the waters on their escape to the ocean. These rocks very much impeded my progress, rendering the motions of the elephant rough and tedious to an uncomfortable degree. At the further extremity of the plain, and bordering upon the sea-shore, the remains of a few mud volcanoes may be seen. They have the appearance of extensive mounds, covered with green sward, and (as is invariably the case with all the mud volcanoes in Arracan) have a few Jhow trees growing upon their sides. Proceeding to the spot for the purpose of examination, I could perceive no further evidences of present activity than what was indicated by the existence of a spring of muddy water on the summit of each volcano; the water rising in bubbles, if at all disturbed, owing to the quantity of carbonic acid gas it contained. The mud was of a grey colour, and impregnated with much calcareous matter.

Emerging from the plain, the traveller may either proceed to *Kaeng* through the interior, viâ *Maen-grah* and *Moreng*, or take the direction of the sea-beach. In either case, the features of the country are much alike; sandstone is still the prevailing rock, and in some instances, when the upper stratum of clay has been washed away, it assumes the substance of an entire hill.

Leaving *Maen-grah* by a narrow path, almost concealed from view by the heavy jungle protruding on each side, I observed a bird that answers in description to the *Buceros Homrai* of Nipal. Indeed, it so closely resembles a drawing of the *Buceros* published in Part I, Vol. xviii. Asiatic Researches, that I cannot for a moment doubt its identity with that bird. I shot one of the many that were hopping about the branches, making a disagreeable noise; their flight was heavy and awkward, owing apparently to the shortness of their wings: opening the stomach, I found it filled with berries resembling those of the *Peepul* and *Burgh'hut* trees; this would seem still further to establish the opinion advanced by Mr. Hodgson, that the *Buceros Homrai* was not a carnivorous bird. Passing through the large village of *Moreng*, the road to *Kaeng* lay over an extensive plain, covered with clumps of trees, the most conspicuous among which were the *Girjan*, *Tilsah*, and wild *Peepul*. Large flocks of the mountain minah were passing over-head, giving the clear chearful chirrup peculiar to these charming birds; and I observed a species of jay that was new to me. It was of an inferior size to the common Indian jay (*Neel-kaunt*), and of a different colour; but from its shape, flight, and general appearance, there was no mistaking its genus. The plumage of the head, back, and wings was of a pea-green colour; the under part of the belly and tail, of a lighter green, and the legs and bill, yellow. *Kaeng* is prettily situated upon high ground, not far removed from the sea, and at the mouth of a creek, which separates it from the district of *Ladong*, surrounded by extensive plains, clear of low jungle, and diversified with rice-fields, gardens and plots of indigo sowings. This village is superior to any one that I have seen on the island, both with respect to situation, and the general appearance of neatness and comfort that prevails throughout the place. Approaching *Kaeng* by the sea shore (in preference to the route above described), the remains of several mud volcanoes may be seen upon the hills to the left. The undulating appearance of these mounds, covered throughout with a beautiful green sward, and studded with a few *Jhow* trees, has a striking and agreeable effect amidst so much jungle and similarity of aspect otherwise common to these hills.

At the foot of the volcano, adjoining the sea-beach, I perceived several boulders of a rock, resembling *clink-stone*; it was very hard and sonorous when struck with the hammer, of a sea-green colour, and intersected with veins of calc-spar; it was not improbable that it had been at one time ejected from these volcanoes in a state of igneous fusion, along with other substances.

Crossing the *Kaeng creek*, I entered a district of *Ladong*; extensive plains devoted to the cultivation of rice, and only separated from each other by the narrow strips of *Girjun* trees and underwood, mark the fertility of this part of *Rambree*; the soil is so exceedingly fruitful that the principal exportations of rice from the island are derived from *Ladong*. There are many Petroleum wells in this district, some of which yield a very fair supply of oil. The whole of the wells known to exist in the islands of *Rambree* and *Cheduba* are farmed by Government, and sold annually to the highest bidder; I conceive it would be (in the end) far more advantageous to Government was the sale to take place *every three years*, instead of *annually*: was more labour bestowed upon these wells, the produce would be greater; but the present system deters a purchaser from devoting his labour to the production of an article that may become the property of a more successful candidate, before he shall have received any return for the capital he had already invested in them. The wells were sold this year for 120 rupees. I am told that six only of the *Ladong* wells are worked. One well is said to yield as much as three quart bottles of oil (or  $2\frac{1}{4}$  seers) per diem, and allowing that the remaining five are nearly as productive, the quantity of oil collected during a season (from the 1st November to the 1st June), would amount to as much as 70 *maunds*.

The oil is sold in *Ladong* at the rate of one-half *tillia* per rupee. The weight of a *tillia* varies from nine to sixteen seers. The *Ladong tillia* of oil is said to be as much as can be contained in 18 bottles or  $13\frac{1}{2}$  seers. The oil is much used, especially for burning; it burns long, and gives a fine clear flame; it has, however, a very disagreeable smell, and is so highly inflammable, that it must be used with caution.

The oil produced on the Island of *Cheduba* is not so abundant or so pure as that of *Rambree*. One of the Petroleum wells in *Ladong* is said to exist on the site of a dormant mud volcano—a circumstance not at all improbable, when it is considered, that the gases and inflammable substances forming the constituent parts of either, are, as far as has been hitherto discovered, essentially alike. The soil thrown up from these wells is highly bituminous, and in some instances abounds with very beautiful crystals of iron pyrites.

I had made up my mind to put up at the *thanna* of Ladong, so took the nearest direction to it. The path lay at the foot of a range of sandstone hills, to the left of the plains; on the summit of this range stood a temple dedicated to Gautama, and in front of it the long pole usually erected near such places of worship. The character of the rock was such as had been hitherto observed, with this exception, that a few rolled pieces of *chert* and *stalactites* were visible in a few places, strewn upon the surface. I was fortunate enough to shoot a very beautiful species of green pigeon in these hills: it was as large as the wood-pigeon of Europe, and had a superb plumage; the colour of the head, back, and tail were of a very dark-green, while the wings and belly presented a bright azure colour.

I had not proceeded far on my way towards the *thanna*, when my attention was roused by the sound of music and the report of fire-arms. Entering upon the plain, I perceived a multitude of people apparently met on some extraordinary occasion. I drew near, and learned that they had assembled to perform the funeral rite of a *Phoongree*, who had lately died. These high priests of Buddha denominated *Phoongrees*, are common in Arracan, and much revered by the laity; they are never known to interfere in the domestic affairs of the people, or exercise that spiritual dominion so generally usurped by the ambitious priesthood of other countries. Confining themselves entirely to the exercise of their religious duties, they are seldom seen beyond the precincts of the *Kioum*; unless it be to make their morning rounds through the neighbouring villages, accompanied by the boys, to whose keeping are committed the voluntary contributions of the inhabitants. It is worthy of remark that these daily excursions are made not so much for the purpose of obtaining supplies for the inmates of the monastery, as to gratify the wishes of the villagers, who are desirous of enjoying this opportunity of testifying their respect and attachment for the ministers of their religion. The discipline of the *Phoongrees* is extremely rigid, and not unlike that preserved in the monastic sects of Europe. To a life of celibacy is added the injunction of not holding any communion whatever with the female sex; and so strictly is this precept adhered to, that a *Phoongree* will neither converse with a female, or receive from her hands the offering she may wish to present to him. The dress of the *Phoongree* is confined to an orange-coloured mantle, which extends from the shoulders to some little distance below the knee; his head is closely shaved, and always uncovered. He sleeps in the *Kioum*, upon a mat, with no other covering than that afforded by his mantle; and his diet is of the simplest kind, one



meal a day being considered sufficient for his subsistence. The food is cooked by some of the scholars of the *Kioum*, or by the newly initiated of the sect ; and those *Phoongrees* who are desirous of maintaining a character for peculiar abstinence, will not even express a desire to satisfy the claims of hunger, however pressing they may be ; waiting patiently until such time as food may be presented to them by some inmate of the *Kioum* : with these are many other observances, all enjoining an uninterrupted course of humiliation and abstinence.

Some of these monasteries are very large, and contain a great many monks, as well as the boys whose education they superintend. They are erected by the villagers, and supply such accommodation as is required. In a remote part of the interior of the *Kioum* is an image of *Gautama*. Before this image the *Phoongrees* prostrate themselves twice a day, and never leave the building without making an obeisance, and intimating their intention to the *Routoo* : a similar duty is performed on their return. This image is composed of more or less costly materials, according to circumstances. In some *Kioums* I have seen the *Phraa* entirely covered with gold or silver leaf ; in others again, it is of wood or stone, with little or no ornament whatever. Flowers, rice, and parched grain are the offerings generally made at the shrine of *Gautama*, either by officiating priests, or any of the laity, as a religious observance, and for the attainment of some particular object of desire.

The assumption of the monastic garb is voluntary ; the person who expresses a wish to become a *Phoongree* is admitted into the convent (without regard to country, or the religion he may formerly have professed), provided he stipulates his readiness to conform to the Buddhist observances in matters of faith and discipline, and there exists no impediment (such as his having a family to support, or his not having obtained the permission of his parents, &c.), to his abandonment of earthly pursuits ; sickness, deformity, and a bad character are also sufficient causes for rejection. Should none of these obstacles present themselves, the candidate is admitted into the *Kioum*, and attired in the prescribed dress, enters upon the duties of a *Phoongree*. If, as is generally the case, his age shall not have exceeded 15 years, he is appointed to the performance of the menial duties, and gradually initiated in the peculiar tenets of the sect, until he shall have arrived at the age of 20 years, the time appointed for confirmation.

It is not uncommon for a *Phoongree* to devote only a certain period of his life to the duties of the convent, returning to the world so soon as that term of religious abstinence shall have expired. These *Phoongrees* are generally young men, who are desirous of assuming the monastic garb, either from a religious feeling, or for the purpose of performing



some expiatory service, and are enabled to do so through the assistance of some persons who deem it an act of piety to defray the expences consequent to their ordination.

In towns and large villages the education of the children\* (the male part of them), is chiefly entrusted to the *Phoongrees*, and it is a part of their daily and uninterrupted occupation. No distinction is made between the children of the rich and the poor : both are treated alike and receive a similar education ; no remuneration whatever being made to these good monks for their trouble, save the daily provision that is voluntarily supplied by the native community for their subsistence. Children under nine years of age are not admissible into the *Kioun*, being of too tender an age to undergo the discipline and duties imposed upon them out of school hours, such as fetching wood and water, cleaning the rice, and attending the priests in their daily rounds, for it is the duty of the boys to carry the baskets containing the contributions of food. Such children as are parentless, or of poor parents, and even those who reside at some distance from the *Kioun*, are fed as well as lodged by the priests. The other boys are allowed a certain time to go home to their meals, but they are obliged to sleep in the convent, for what they have read during the day is repeated in the evening or at day-break on the following morning.

There is another source of education equally peculiar to the Mughs ; such as are not engaged in any pursuit or employment requiring all their time, devote a portion of it to the education of children, entirely gratis ; less labour being expected from the children than is imposed upon them in the *Kiouns*. Children under nine years of age and of both sexes are admissible to such schools, the rules, as before observed, being less strict than those enforced at the monasteries ; it is therefore not uncommon to meet with children of a very tender age at such schools.

I know nothing so gratifying to a stranger as a visit to the larger *Kiouns* in the evening of a fine day. To observe boys of all ages rushing from the scene of their daily labours to the tank or other place of enjoyment, with that cheerful demeanour which marks the school-boy in our own country when released from his task and joining his fellows on the play-ground. At this time a group of monks may be seen standing on the elevated *Michaun* at the threshold of the *Kioun*, enjoying the evening air, or quietly watching the conduct of

\* I am indebted to my friend Captain WILLIAMS for much information on this subject, as well as on other matters connected with this singular people. The great popularity he enjoys with the Mughs, has given him favourable opportunities for prosecuting his inquiries into their customs, &c.

the little urchins just escaped from their controul. To the eye of the most careful observer, their countenances bespeak a tranquillity of mind unknown to such whose passions are yet unsubdued. There is in the appearance of these priests an equal absence of puritanical zeal or overweening confidence; their features are as placid as the sky above them, and even with those whose religious duties are of the graver cast, a smile of benevolence may be seen to break through the shades of sorrow and self-degradation. Often have I, in passing, addressed these monks, and have invariably received a courteous reply. On some occasions I have found a welcome in the *Kioum* when shelter was denied me elsewhere; and with that welcome the more substantial evidences of good-will in the shape of a repast prepared for myself and followers. I never left the *Kioum* in prosecution of my journey without feeling grateful to those good monks, who had so charitably received the *white stranger* into their mansion.

The *Bhi Kuni* (nuns), are equally common with the priests. They either reside in a convent of nuns, or live separately in some house constructed near a *Koo* (temple), superintending the offerings, and leading a life of religious abstinence. The greater part of the *Bhi Kuni*, have retained their virginity from early youth; others again have retired from the scene of earthly cares at a more advanced age; in some instances, after marriage, but only when that marriage has not been productive of children. The dress of the *Bhi kuni* is similar to that of the *Phoongrees*, and their discipline in every other respect alike. Both are equally revered by the laity, and supplied with the little food necessary for their subsistence.

Respected by the people when living, it is not surprising that the *Nigh-ban*\* of a *Phoongree* should be marked by circumstances expressive of the sanctity of his character, and the attachment of his flock. The nature of the preparations made to do honour to his remains will depend much upon the means of the population residing in the neighbourhood of the *Kioum*. If these should be ample, the funeral obsequies will be performed on a scale of magnificence seldom surpassed in their most expensive shews; but if otherwise, the ceremonies will of necessity be got over in a hurried and economical style. The following will however be found to be the general practice with regard to the obsequies of a deceased *Phoongree*, and such mode of performing them was adopted in the present instance.

When emancipated from the world, the body is opened and embalmed; after which it lies for many weeks exposed to public view. The body is then confined in a coffin richly embellished with gold and

\* *Nirvân*, death; properly *emancipation*.

silver leaf, and this is placed upon a lofty car that had been constructed for the purpose. The inhabitants of the neighbouring villages flock to the spot, and ropes having been fixed to the fore and hinder parts of the car, a contention arises among the villagers for the remains of the *Phoongree*. One party pulls against the other, and those that are successful claim the honor of finishing the ceremonies. This is done by a grand display of fireworks, the greater part of which are skilfully directed at the car, which is at length set on fire and the body is consumed\*. Should the deceased *Phoongree* have maintained a character for peculiar sanctity, a part of his remains is not unfrequently preserved from the flames and retained as valuable relics. The influence of superstition has attached much value to such remains, and in addition to the worth they may be supposed to possess from the religious character of the departed priest, they are held by the more ignorant to be a common ingredient in those charms that are in use with the wizard.

The Mughs hold the practice of burning the dead to be more honourable than that of committing the body to the earth or the sea, probably from its being attended with greater expense and publicity. Funerals are, however, conducted in either way, according to the means of the relations, or other circumstances favouring the adoption of one particular practice. The spot on which a funeral pile had been raised is not unfrequently marked by a cenotaph, a garden, a clump of trees, or such other monument of affection as the condition of the parties will enable them to place over the ashes of a departed relative. In some cases, the funeral rites are followed with donations of food and clothing to the priests, and a further evidence of piety is evinced in the adoption of some young man who shall express his readiness to embrace the profession of a *Phoongree*.

January 14.—I had slept at the thannah on the night of the 13th, and was up at an early hour on the following morning with the intention of moving on to *Oogah*. The distance from *Khyouk Phyo* to *Kyouprath* is at least sixteen miles; from that to *Ladong* is said to be as much as twenty; so that I had travelled 36 miles in the two days. *Oogah* was distant 12 miles from *Ladong*, and as the route lay over a level country I was not detained very long upon the road. The villages in *Ladong* are remarkably large, and have a cheerful, comfortable appearance. The whole face of the district, with the exception of the narrow belts of *Girjun* trees and underwood before mentioned, is under cultivation; and but for the costume and features of the inhabitants as well as the peculiar construction of the houses, I could have fancied

\* See a full account of the same ceremony by the late Rev. Dr. CAREY, As. Res. xii. 389.—Ed.

myself in Bengal. The general appearance of the *Mugh*, induces the supposition that his condition is not only infinitely superior to that of the poorer classes in many parts of India, but that he is comparatively happy and contented with his lot. His clothing, though coarse and of native manufacture, is ample for the climate, and his vigorous frame of body bespeaks a sufficiency of nourishment. As his wants are few and easily supplied, there is no call for that unremitting labour which secures to the poor of other countries their scanty sustenance. The earnings of one day of toil generally provide for the exigencies of two successive days of ease; and to such as are, from a more indolent habit, less willing to cultivate the soil or perform the duties of an hireling, the forest and the sea present an inexhaustible supply of food. It is to this abundance of the necessities of life in some one shape or another that we may ascribe the existence of that apathetic indifference to the future, characteristic of the *Mugh* population, and until some *artificial wants* are produced by a taste for luxuries hitherto unknown, we shall look in vain for that display of activity and toil peculiar to a more civilized, but less happy and probably less virtuous, race of people. It is not however too much to affirm, that such a change is already perceptible among those who are most in contact with Europeans and the natives of India.

In the towns of *Khyouk Phyoo* and *Rambree*, we may observe this indication of the growing taste for articles of foreign manufacture, in the small investments of cutlery, glass-ware, muslins, and broad-cloth exposed for sale in the shops along with the produce of the country. The people have already become smarter in their dresses, and were a little more attention paid to their pattern of piece goods, I have no doubt but the sale of these would be far greater than it is at present. Long habituated to a state of being little remote from that enjoyed by the brutes of the forest, the present generation are prepared to value those little luxuries denied to them during the reign of Burmah despotism, and will not be slow in securing the possession of them if placed within their reach. It is amusing, though melancholy, to hear these poor people relate the state of things in former days, in as far as regards the importation of foreign produce, and the prohibitions that debarred them the privilege of wearing the muslin turban or angah, even were they sufficiently wealthy to purchase the materials for one. As any exportation of the staple produce of the soil was seldom or ever permitted, few returns were made in the shape of Europe or Indian goods. They did, on some occasions, find their way into the country by the *Godooks* that returned from Calcutta and Chittagong, laden with such articles of Europe or Indian manufacture, as the owners were enabled to obtain in exchange for the gold leaf, deer horns, bees' wax.



and earth oil, the produce of Ava and Arracan. The demands of the Burmah *Kaeng*\*, and the numerous exactions, with the expenses of a long and dangerous voyage, were, however, thrown with such severe but necessary weight upon the original prices of the several commodities imported, that none but the rulers of the land would venture to evince a disposition to become possessed of them.

Property has now become comparatively secure; a stimulus has been given to industry by the freedom allowed to the exportation of produce; with an increase of production there will be an augmentation of capital, and the agriculturist may look forward to the attainment of those articles of comfort and luxury hitherto denied to him. Still this change for the better will, of necessity, be very gradual. It is as it were a newly discovered land, and as such it will require the united efforts of capital and labour (joined with skill), to bring its resources into play. As is well known, the staple produce of the soil is *rice*. Great quantities of this grain are annually exported to Madras and Penang: the returns being generally made in kind, and consisting chiefly of Madras cloths and Europe muslins, which are either sold in Arracan or retained for importation into Ava. I am not aware that any other article of agricultural produce is exported from *Rambree*. Both cotton and indigo are, however, grown upon the island, the former on the mountain side after it had been cleared of the jungle; tobacco is also produced in the ravines and clefts of the hills, subsequent to the accumulation of alluvial soil deposited therein by means of a dam so constructed, as to oppose its escape with the torrent. But neither of these are produced in such abundance as to permit of a large exportation; the quantity grown being little more than sufficient for consumption in the province. A want of capital, and perhaps a want of confidence in the Government, prohibiting agricultural speculation, the production is generally confined to what may be deemed sufficient for domestic purposes, or be grown with the sure prospect of ultimate reward.

The morning was bitterly cold, and I was glad to dismount from the elephant and walk. Snipe were very numerous on a piece of marshy ground, through which the road lay, and further on, I observed two deer of the same species as the *Ratwa deer* of Nipal; I could not give a better description of this animal than referring my readers to the account given of it by Mr. HODGSON along with the drawing, both of which appear in Part 2, vol. xviii, Asiatic Researches. I had before seen one that had been caught in a net, and brought unto me. The

\* Collectors of customs. The duty levied was usually as much as ten per cent. and not unfrequently paid in kind.



*Mughs* call the animal *Ghi*, and say, that they are very abundant upon the island, residing in the recesses of the forest. The two deer above-mentioned were seen at the skirts of the jungle, and were evidently returning to their haunts after a night's ramble through the plains.

There was nothing peculiar in the geological features of the country between *Ladong* and *Oogah*. The soil was, as usual, composed of a rich clay, mixed with a small proportion of sand, and sandstone the prevailing rock. The dip of the stratum, wherever a stratification could be observed, being still to the S. S. W. and S. W. parallel to the bearing of the hills.

Leaving the stubble fields of *Ladong*, I came once more upon the beach, and could see the village of *Oogah* beyond me, very prettily situated on a bight of the sea. It was surrounded with tamarind and mango trees, and was on the whole a neat and comfortable looking village. The prospect from *Oogah* was remarkably fine; beyond it, on the land side, lay *Jeeka*, the highest mountain in the island, and immediately opposite to it, separated only by a small channel of the sea, was the island of *Cheduba*, with its blue hills and undulating plains. A *Godoo* was at anchor between the islands, and from the reports of the crew who were on shore for water, it appeared that she had come last from *Chittagong*, and was bound to *Bassem*, laden with betel-nuts and sundries. The *Soogree*\* of the village had come out to escort me to his house, a snug looking building surrounded with a strong bamboo fence. In front of the house, and under the tamarind trees, a nice *michaun* had been constructed for the accommodation of travellers, and upon this I lay down and slept until a room with a mat, &c., should be got ready in the *Soogree's* house for my reception at night. I should have been very well pleased to have slept out in the open air upon the *michaun*, but for the remonstrances of my host, who pointed out the danger of doing so in a place so much infested with tigers. It was perhaps as well that I did not sleep outside, for a tiger came into the village during the night, and so much alarmed one of the elephants that he broke loose. The old *Soogree* appeared to be in very good circumstances; he had a large house, abundance of poultry and cattle, and in addition to these evidences of prosperity, he had two wives. Polygamy is common enough in Arracan. There appears to be no limitation; a man may keep as many wives as he can afford to maintain. The consent of the first wife should, however, be obtained previous to the conclusion of a second contract. It is seldom that a refusal is given, and equally seldom that attention is paid to it. Retaining the privileges of a mistress, and probably aware of her

\* The head man of the circle; he collects the revenue.

inability to enforce a compliance with the restriction she wishes to impose, the elder wife usually signifies her readiness to receive into the family a second helpmate for her husband. This new alliance is seldom resorted to before the first wife shall have ceased to retain the charms of her youth, and have become incapable of performing the several domestic duties incumbent upon her.

The system of betrothing children to each other at a very early age, so common with natives of India, does not obtain with the Arracanese. Instances will occur when their marriage has been the result of a preconcerted arrangement on the part of the parents so soon as the female shall have attained the age of maturity (15 years), and not preceded by mutual attachment of the parties united. The young people are not, however, unfrequently, permitted to form their own choice, and where no great disparity of age exists, the consent of the parents is generally obtained. As there is no seclusion of the females there can be no want of opportunity for the display of those little attentions, which in the eyes of the female sex distinguish a lover from a mere observer. The lifting of a pitcher from the well or tank to his mistress's head, or the present of a bouquet of early flowers to adorn her hair, are but few of the many ways by which the passion of her lover is exemplified. Should such attention be pleasing to the fair one, she will probably intimate as much by the gift of a neatly made bundle of *cheroots* manufactured by her own hand. The attachment between the parties being known to their parents and their consent obtained, the astrologer (*Hooradye*), is consulted : the day, month and year of their children's birth is made known to him, and if the result of his calculations are favourable to the union, every thing is arranged for its completion. In the first place, a present of a fine silk dress ; some gold and silver ornaments, with a little tea mixed up with spices, are sent to the young lady by her lover, who will perhaps follow in the evening of the same day preceded by the young unmarried men of the village : these advancing before him as he approaches the house of his intended bride, extend to the right and left, and oppose his further progress until he has satisfied them with as many rupees as he can afford to lose. He now draws near to the threshold of his mistress's house. She, on her part, is attended by the young maidens of the village, and these oppose his entrance to the dwelling until he has paid a fine similar to that imposed upon him by his male companions. The lover now enters the house ; and seated at his mistress's side, flowers and water are scattered over both by the hands of the oldest and most respectable person present.

This done, they both sit down to a meal prepared by the parents of the girl, receiving the food from each other's hands. The meal ended,

the hands of the bride and bridegroom are laid upon each other, (the hand of the bridegroom uppermost,) and washed by the same person who had sprinkled the water and flowers over the parties. The father of the bridegroom then takes a ring from off his son's hand, and places it upon the third finger of the bride's left hand. The marriage ceremony being now completed, a *nantoh* and entertainment is held at the bride's house. The bridegroom retires with the bride, and remains seven days in her parent's house, preparatory to his taking her to his own home. This will be found to be the general practice of the people on the occasion of their nuptials, but it is not uncommon for a man to take to himself a wife without going through any part whatever of the ceremony above described, nor is there any discredit attached to the parties so united. The woman is viewed in the light of a wife, and treated, in every respect, in the same manner as if she had been united to the man in the manner I have detailed. A *prostitute* was a being unknown to the *Mugh*s before the country had fallen into the hands of the British. Among the blessings attending the change of rule and marking the progress of *civilization* in Arracan, is the introduction of a gradual increase of that unhappy class of people, and with it the miseries that are consequent to an unrestrained and promiscuous intercourse. To the honour of the *Mugh* women I must declare, that instances of prostitution on their part are still of rare occurrence; the reputation for this vice is still more generally attached to their *more civilized* neighbours the *Bengalees*.

So much liberty being allowed to the sexes in early youth, it may be supposed that an unlicensed intercourse will, in many instances, be found to exist between them previous to their union. It would be unreasonable to affirm that a passion which is so often known to break through the bounds imposed by religion and morality upon a people who claim for themselves a superior degree of civilization, should not in this country be known to exist in an equally unbridled state, and produce the evils consequent to an unrestrained intercourse and the shame of an avowal. Instances of abortion or bastardy are not, however, of frequent occurrence, the good sense of the parents, to whom the attachment in its several stages is generally known, preventing by a timely union of the parties, the evil which must originate from an intercourse unsanctioned by custom and authority.

When it is considered how easily a divorce is obtained, and how seldom sought for, we may naturally conclude that marriage is conducive to the happiness of the people. Separation may be effected (privately) by a deed drawn out by husband and wife, and witnessed by two or more respectable neighbours; or both parties may appear before the

*meeo-woon* or magistrate, and a separation is instantaneously effected on their compliance with the rules laid down for observance in such cases. If the wife objects to remain any longer with her husband, and he shall be found to have repeatedly ill treated her, she is at liberty to depart, receiving from him the whole of her property, as well as the children (both male and female), that may have been born to her. The children are, in maturer years, allowed to reside with either parent as choice directs. If, on the contrary, the wife shall be found to have behaved ill, she pays a certain sum of money (generally about 25 or 30 rupees), to her husband, who also retains possession of the male children; the wife receiving no part whatever of the property. In cases where no criminality is attached to either party, and both desire to be separated, a fair division of property is made, each receiving what he or she may have possessed before marriage, with an equal share of the produce of their united labours; the husband retaining the boys, and the wife the girls. The case being investigated and decided upon, a *pawn* is broken into two pieces, one of which is given to each as the emblem of separation. This done, the divorce has been effected, and they are both at liberty to contract any new alliance.

[*To be continued.*]

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III.—*Description of the (so called) Mountain Trout of Kemaon.* By  
Dr. J. M'CLELLAND, Assistant Surgeon, 30th Regt. N. I.

From among the treasures of natural history of Kemaon that have not hitherto been indicated, the following notice of a new species of fish, which affords a plentiful article of food to those who reside in the vicinity of small rocky streams, may not be uninteresting. From the appearance of this species, it has commonly been considered by Europeans to whom it is familiar as a common mountain trout; a closer examination however, soon detects the mistake, and except that it belongs to the class of abdominal fishes and inhabits fresh-water streams, there is no natural connexion between this fish and the species to which it was supposed to belong. The following are its distinguishing characters.

Body compressed; mouth situated under the head, lunate, retractile, toothless. Dorsal fin consisting of eight rays. Two ventral fins situated on the centre of the abdomen, caudal fin bifid.

The colour of the back is bluish-black, diminishing in intensity on the sides, which are each marked as usual with a lateral line, and the belly is pale bluish-white. The scales are so small as to be scarcely perceptible, and there is a slight golden lustre or iridescence about the head; the length is from three inches to nine.



The habits of this fish are so peculiar as to deserve to be mentioned. It derives its food from the green slime or moss that collects on the surface of rocks under water, and which is removed with considerable difficulty with the finger; but so well has nature provided the creature with the means of procuring its peculiar sustenance, that the object is fulfilled with ease and apparent enjoyment. When feeding on the upper surface of a stone, the animal glides forward with sufficient force, and at the same time depresses the under lip, with which it scrapes the slime off the rock as it passes over it, leaving a streak behind like the scratch of a stick. If the food is to be derived from the side of a rock, the creature accommodates itself accordingly; and if from the under surface of a projecting ledge, it throws itself on its back and darts forward with the most wonderful agility.

From observing these peculiarities of character it became necessary to examine the anatomical structure of the mouth and digestive organs of the animal, and the following is the result.

The under jaw or rather the under lip (for it cannot be said to have any jaws, and in this respect it resembles the sturgeon and loricaria), is composed of three small bones, the two outer are articulated at their bases to the inferior angles of the ossa malarum or cheek bones, (*a* fig. 3. Pl. I.) and the centre one is in like manner attached to the sternum (*b*), these bones (1, 2, 3,) have hinge joints by which the lip may be depressed at its free extremity, and they are attached laterally to each other by strong ligaments.

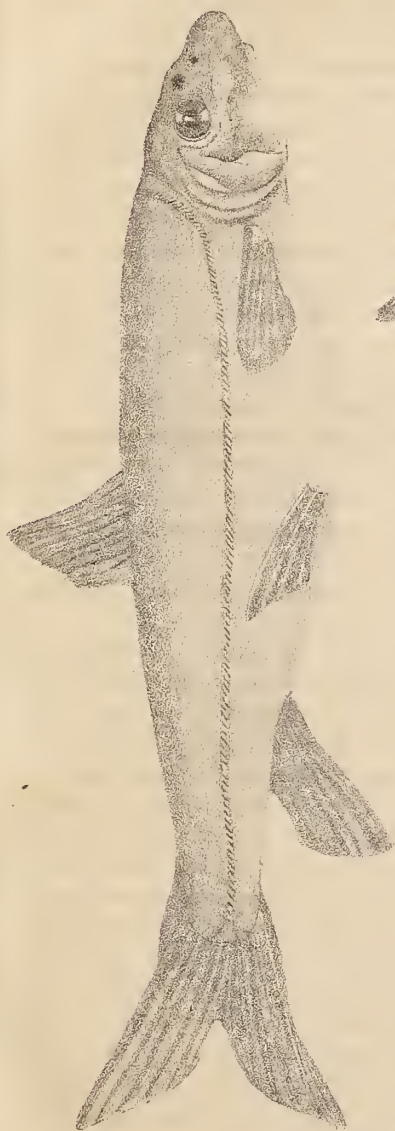
On the inner side of the bones of the lip is situated a strong muscular mass (*a* fig. 4.) whose fibres originate on the inner side of the sternum, and are inserted into the upper extremities of the bones and ligaments of the lip, while that part of the organ which is used for collecting food in the manner above described, is at once protected and adapted to the performance of its singular function by a thick cartilaginous covering. Whether we contemplate the peculiar figure of the ossa malarum, the sternum, or of the muscles, nothing can be more simple or complete than the means resorted to by Providence in adapting the lip of this creature to the peculiar office it is destined to perform.

From the unyielding nature of the abutments to which the lip is attached in order to enable it to resist the pressure it is exposed to, as well as from the peculiar nature of the joint, it is incapable of any other action than that of being depressed; but owing to its great strength and necessary thickness, this motion alone would not be enough to open the mouth sufficiently for the admission of food, and this brings us to another contrivance still more curious.

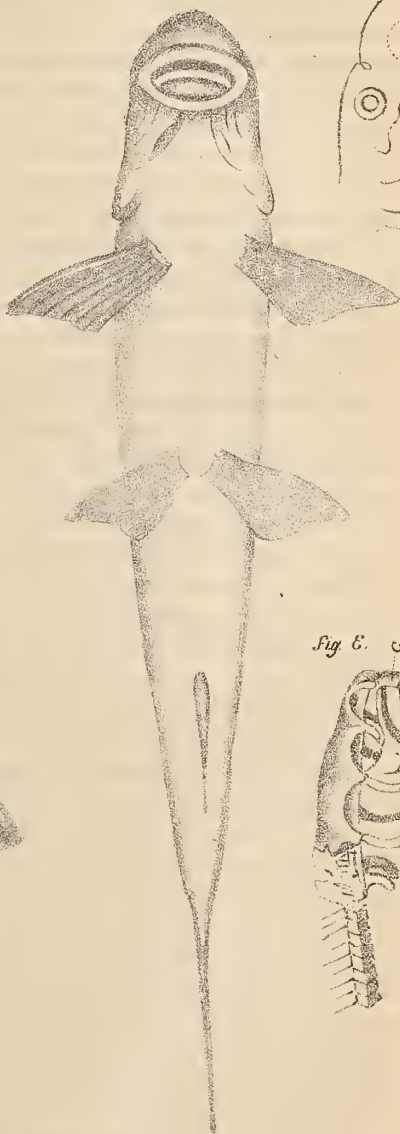
There is a small bone (*c* fig. 3.) loosely attached to what may be named the nasal process of the frontal bone, by a hinge joint which



*fig. 1.*



*fig. 2.*

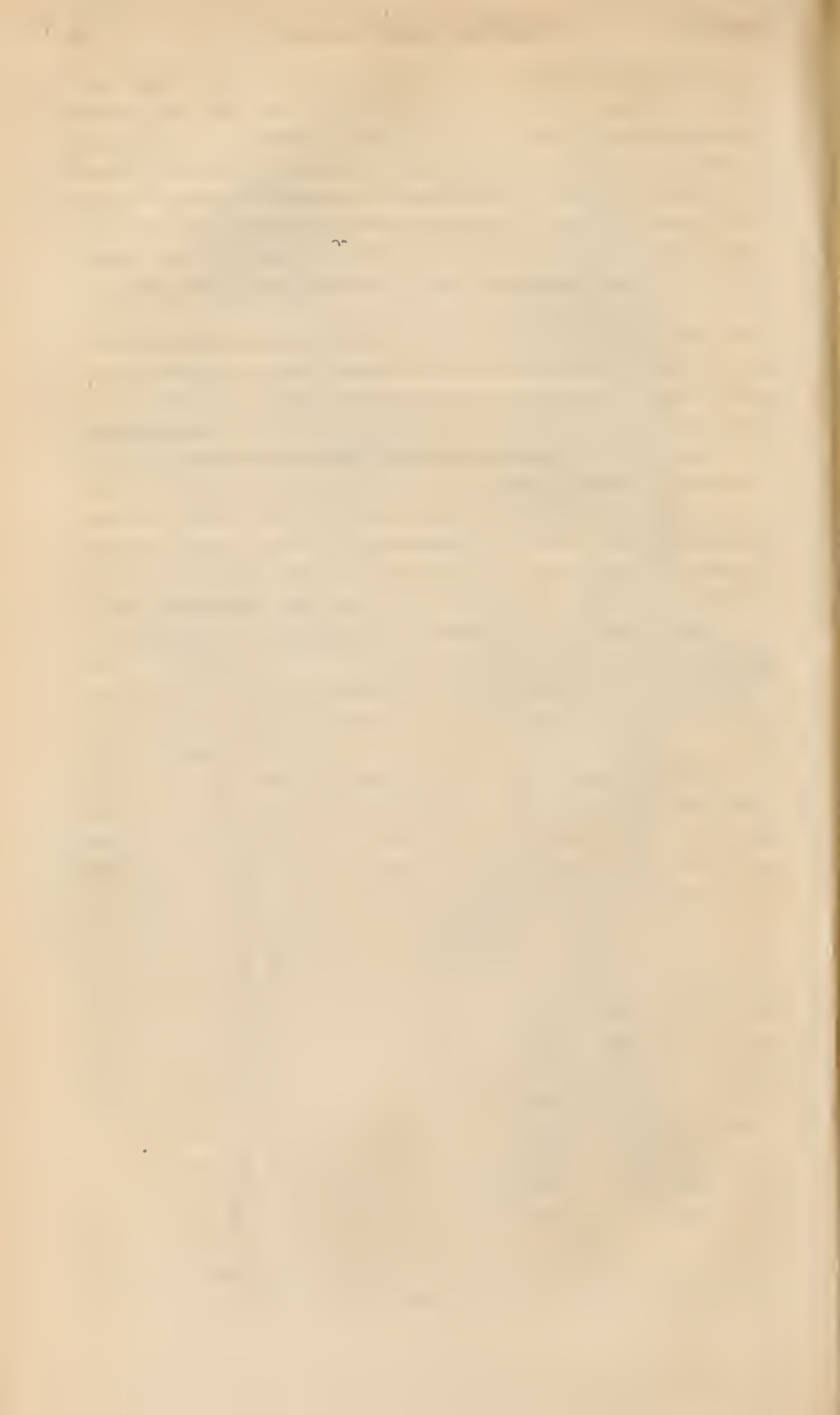


*fig. 4*



*fig. 5.*





enables it to swing freely backwards and forwards, and to the lower end of this there is fixed a cartilaginous rim which forms the anterior boundary of the mouth (*d*), and by the muscular structure of the snout and palate the anterior boundary of the mouth is drawn forward or retracted at pleasure. It is probable from the consideration of these parts that they do not serve merely for opening the mouth, but also assist in collecting or sucking food into it, by means of the vacuum consequent on the enlargement of its cavity, the opercula being compressed on the apertura branchialis.

From the soft pulpy nature of the food mastication would be useless, accordingly there are no teeth: the tongue is short and cartilaginous. The last remarkable circumstance in the anatomy of this fish which I shall mention is, the great length of the intestinal canal, it being eight times that of the body, the stomach alone extending the whole length of the abdominal cavity. These circumstances indicate either the innutritious nature of the food, or the strong digestive powers that are requisite: the latter would appear to be the case from the muscular strength of the stomach, which is displayed to the naked eye by the numerous white bands of longitudinal fibres which may be observed passing thus in a zigzag form from one extremity to the other.



Magnified.

The whole length of the canal was loaded in the specimen examined with the peculiar slimy food already mentioned.

During the warm season these fish are seen sporting and feeding at all hours, but in winter they spend their time chiefly under rocks and stones, where they probably deposit their spawn, only coming out to feed as the sun ascends in the meridian, and again retiring in the afternoon; or on being frightened, they rush into their hiding places, from which they can easily be taken with the hand, and in this way the native fisherman in a few minutes secures as many of them as he wishes. Conceiving them to be trout every attempt has been made to catch them in the usual way with fly and bait, and though every device has been resorted to, instances of success are so rare that they may be almost referred to chance. A less refined but more successful method of fishing (as I have been assured by an intelligent friend who has seen it) is practised in the vicinity of Lohoochat by the blacksmiths during periods of relaxation from their more legitimate calling: these persons, aware of the disposition of the fish to spend certain seasons under stones, pursue the beds of the rivers, striking such loose stones with their sledge-hammers as they may suspect to conceal fish, which they thus kill by concussion.

IV.—*Discovery of the Genuine Tea Plant in Upper Assam.*

[The following official correspondence of the Tea Committee has been obligingly handed to us for publication. We hasten to present it to our readers in its original shape rather than attempt to make an abstract of its contents, because the curiosity of the public is much raised, and they will naturally wish to follow the whole train of the discovery, and give the credit thereof where it is due.—ED.]

*Letter from the Committee of Tea Culture to W. H. MACNAGHTEN, Esq.*

*Secretary to the Government of India, in the Revenue Department.*

SIR,

We request that you will have the goodness to submit to the Right Honorable the Governor General of India in Council the enclosed copies of the reports, which we have received from Captain JENKINS, dated the 7th and 19th May, and from Lieut. CHARLTON, dated the 17th May; also a subsequent communication from Lieut. CHARLTON, dated the 5th of last month, together with the samples of the fruit and leaves of the tea plant of Upper Assam, which accompanied it, and some specimens of the leaves previously received.

2. It is with feelings of the highest possible satisfaction that we are enabled to announce to his Lordship in Council, that the tea shrub is beyond all doubt indigenous in Upper Assam, being found there through an extent of country of one month's march within the Honorable Company's territories, from Sadiya and Beesa, to the Chinese frontier province of Yunnan, where the shrub is cultivated for the sake of its leaf. We have no hesitation in declaring this discovery, which is due to the indefatigable researches of Capt. JENKINS and Lieut. CHARLTON, to be by far the most important and valuable that has ever been made in matters connected with the agricultural or commercial resources of this empire. We are perfectly confident that the tea plant which has been brought to light, will be found capable, under proper management, of being cultivated with complete success for commercial purposes, and that consequently the object of our labors may be before long fully realised.

3. It is proper to observe, that we were not altogether unprepared for this highly interesting event. We were acquainted with the fact that so far back as 1826, the late ingenious Mr. DAVID SCOTT, sent down from Munipore specimens of the leaves of a shrub, which he insisted upon was a real tea; and it will be seen from the enclosed reports from the agent to the Governor General on the north-eastern frontier and his assistant, that a similar assertion was strongly urged in regard to the existence of the tea in Upper Assam. Still we felt ourselves bound to suspend our decision on the subject until we should be in possession of the fruit of the reputed shrub, the only test which ought to guide us. We knew that several species of *Camellia* were natives of the mountains of Hindustan, and that two of these were

indigenous in our north-eastern frontier provinces; and taking into consideration the close affinity between the two genera, we were disposed to expect, that the alleged tea would prove nothing else but some sort of *Camellia*. We have at length obtained the fruit of the *Sadiya* plant from Lieut. CHARLTON, and we are now enabled to state with certainty, that not only is it a genuine tea, but that no doubt can be entertained of its being the identical tea of China, which is the exclusive source of all the varieties and shades of the tea of commerce. With the view of exhibiting the peculiarities in the structure of the fruit, on which depends entirely the difference between the Tea and *Camellia*, we have desired our officiating secretary to annex to this letter a sketch of the fruit of both, with explanatory remarks.

4. We beg leave most respectfully to submit the preceding facts to the particular consideration of Government, and earnestly to recommend, that in the first instance, and as early as may be practicable, one or more scientific gentlemen properly qualified for the investigation may be deputed into Upper Assam for the purpose of collecting on the spot the greatest variety procurable of botanical, geological and other details, which, as preliminary information, are absolutely necessary before ulterior measures can be successfully taken with regard to the cultivation of the tea shrub of that country. We also beg to express our opinion, that it would be highly desirable to adopt forthwith the plan suggested in Lieut. CHARLTON's last letter, of the 5th of November, of establishing a communication with Yunnan by means of a land-road, at least as far as Hookam, since, independent of all other advantages, it would materially facilitate the operations of the scientific deputation, which we have recommended should be sent to Upper Assam with as little delay as possible.

5. We anticipate that the execution of the recommendations we have made, need not be attended with any considerable expense; but it appears to us, with reference to the very great importance of the occasion, that the only consideration which should have weight is, that the money which may be required should be faithfully and economically applied to the purposes for which it may be granted.

We have, &c.

Calcutta, Dec. 24, 1834. Signed by the Committee of Tea Culture.

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*From Captain F. JENKINS, Agent to the Governor General on the N. E. Frontier, to G. J. GORDON, Esq. Secretary of the Committee of Tea Culture, dated Gowahatty, 7th May, 1834.*

I regret the delay that has occurred in acknowledging your circular, dated the 3rd March, to my address: it has been occasioned by unavoidable circumstances which I have further to regret will prevent



my replying to your communication to the length I could wish or the subject deserves.

2. My little acquaintance with Assam will not admit of my replying to all your questions, but from general information and my own observation, I am so fully impressed with the belief of the fitness of the mountainous region which divides Cachár from Assam for the growth of tea, that I beg to attempt to call the attention of the Committee to that region in the most forcible manner I can, with a view to its examination by a competent individual.

3. The mountainous tract I allude to, commences from the east of the country of the Jynteah Raja, and continues always increasing in elevation until it reaches to the eastern end of the valley of Assam, and is so far under the controul of British authority, immediately between Cachar and Assam completely so, and farther on more or less directly or indirectly. The part entirely under us ranges from 6 to 8000 feet greatest heights, and farther east the mountains attain a height of 10,000 feet, and the valleys and beds of streams are from 2500 to 4000 feet above the sea. From the end of the valley of Assam this ceases to be merely a west and east range, its direct continuation passes into China into the tea countries of Sechuen and Yunnan: the northern bend in the latitude of Sadiya meets a branch of the snowy mountains, and the southern divides off into the two mountainous ranges, which border the Irrawady on either side, from its sources to the sea.

4. Every part of this mountainous country that I have visited, presents nearly a uniform geological structure, being almost entirely composed of clay-slate, and every where nearly of the same appearance, very much broken and disintegrated, so much so as to be seldom visible in mass, and being covered with a deep coat of soil and luxuriant vegetation even on the greatest heights.

5. Camellias are found in every part of this hill country, and within our jurisdiction in the Singpho district of Beesa, a coarse variety of the tea plant is, as I am informed, undoubtedly indigenous. A plant was given to me at Sadiya, which I have reason to suppose, was a genuine tea tree, and I intended to have brought it to Calcutta for examination, but I received it in a sickly state, and from the prevalence of great heat I was unable to succeed in taking it to the presidency. I shall endeavour to procure another plant or two for the satisfaction of the Committee. However, having no doubt myself of the fact of the tea shrub being found wild in the eastern parts of Assam, I would beg to recommend the expediency of some well-qualified person being at once sent up for the identification of the plant beyond any objection, for the examination of the soil in which it grows as reported, and an inspection of the tract of mountains between Cachar and Assam.

6. If this recommendation were acted upon, the person deputed should be in Cachar by the 1st of November, and proceed immediately to ascend the mountains in communication with the officer in civil charge, Captain FISHER, who would previously have made arrangements for his being provided with porters, &c. He should pursue nearly the tract followed by me on the same journey, and on arrival at Bishonath should proceed by water to Sadiya, and thence go up to Beesa at the foot of the mountains dividing Assam from Ava.

7. As the individual thus deputed would of course be a competent botanist, and perhaps geologist, I contemplate much indirect acquisition to science from the trip thus sketched out, it being almost entirely untrodden ground to any scientific observer, and of course it is to be expected that much benefit, in an economical point of view, might result to the state from the researches and suggestions of one who could bring to knowledge the unlimited productions of the vegetable and mineral kingdoms in the regions in question.

8. In case you should not have forwarded a copy of your circular to Captain FISHER, I shall do so, and request him to make a report to you upon the subject of it with reference to Cachar.

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*Extract of a private letter from Captain F. JENKINS to G. J. GORDON, Esq. dated the 19th May, 1834, with enclosures.*

Since I wrote you officially, I have had the enclosed note from Lieut. CHARLTON of the Assam Light Infantry, regarding tea, and I have been presented with the enclosed luminous map\* of the tea districts in Upper Assam by a Phokun who accompanied Lieut. BURNETT in an expedition to the top of the Patkoye range of hills, dividing the waters of the Burhamputra from those of the Kuenduen. On this range of hills the trees grow in great abundance, and are described to reach the size of small forest trees or very large shrubs. You will see how he says the leaves are treated, which though it seems rather an odd mode of manufacture, he and others persist in saying is the way in which the Singphos manage the tea. I never had an opportunity of trying it, but those who had said it was palatable enough, and the leaves thus prepared keep for ever.

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*Copy of a letter from Lieut. CHARLTON to Captain JENKINS, dated on the Burhamputra, the 17th May, 1834, enclosed in the preceding.*

With regard to the circular from the Tea Committee which you showed me at Gowahatty, I have much pleasure in communicating the little I know of the tea plant of Assam. I was informed about three years ago of its being found growing wild in the vicinity of Beesa at

\* This map being of the most crude description is omitted here. It did not accompany the Committee's Report to Government.

the foot of a low range of hills and in the subjacent plains, from whence I obtained three or four young trees, which I gave to Dr. JOHN TYTLER in Calcutta, with a view of their being planted in the Government Botanical Garden. I have since understood they decayed soon after.

The soil where they grow was described to be alluvial like most parts of Assam, and the trees rising to the height of twelve or fourteen feet more, either at the foot or a small distance up the hills, but never on the summit; from which I infer a sheltered situation to be most favorable. The aspect was generally southerly or south-east. I am sorry I cannot give you a minute description of the plant, not having it now before me; but so much I recollect, the leaves were about two inches in length and one in breadth, alternate, elliptic-oblong and serrate. The flower white, very like that of the wild white rose, but much smaller. The seed I have not seen; it was described to be contained in a red, round, three-lobed capsule, the lobes detached or bursting along the upper sides, with a single seed in each. From what I have seen of the tea plant in different parts of the world, and lately in New Holland, propagated by seeds brought direct from China, I have little doubt but that *that* found near Beesa is a species of tea; and though it may be spurious or even a *Camellia*, as Dr. WALLICH suggests, its growing there indigenous and in great abundance affords good grounds for supposing that the introduction of the Chinese plant into Upper Assam would be attended with success. I have not had an opportunity of making any experiment on the leaves; they are described as small in their green state, but acquire the fragrance and flavour of Chinese tea when dried. The Singphos and Kamtees are in the habit of drinking an infusion of the leaves which I have lately understood they prepare by cutting them into small pieces, taking out the stalks and fibres, boiling and then squeezing them into a ball which they dry in the sun and retain for use. I have written to Sadiya for a specimen of the tea prepared in this manner, and for plants and seeds; I will send you some if I am able to procure them, and write to you on this subject more fully by and bye.

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*Copy of a private letter from Lieut. CHARLTON to Captain JENKINS, dated at Sadiya, the 8th November, 1834.*

I have now the pleasure of sending you some seeds and leaves of the tea tree of Assam, and am sorry that the unsettled state I have been in for the last three months has prevented my sending them so soon as I intended. The leaves you could have had before, but I was anxious to make them into something like tea, the best test that the tree is not a *Camellia*, as Dr. WALLICH imagines. It appears coarse, owing to the leaves being large and much too old, which could not at

the time be obviated. By the end of the cold weather, when the young leaves are on the trees, I hope to send you as good black tea as we generally receive from China. I will make experiments in the interim in the art of preparing green.

The tree I now find is indigenous to this place as well as Beesa, and grows wild every here and there, all the way from this, about a month's journey, to the Chinese province Yunnan, where I am told it is extensively cultivated. One or two people from that province have assured me, that the tea tree grown there exactly resembles the species that we have here ; so I think there can be no longer any doubt of its being *bond-fide* tea. What a pity there is no means of communication between Sadiya and Yunnan. A good land-road made only as far as Hookam, and there are no natural obstacles of any consequence to prevent it, would afford an outlet for British merchandize into the very heart of China.

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*Copy of a note from Captain F. JENKINS to Dr. WALLICH, on the back of the above, dated (at Gowahatty) 22nd November, 1834.*

I have only time to send this and to say, I have sent a jar of tea-leaves and a box of tea seeds to go by to-day's dâk, I hope you will see from the seeds that there is no doubt ours is genuine tea.

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*Memorandum explanatory of the sketches which accompany the report of the Committee of Tea Culture.*

There is no danger of mistaking any plant for the tea except the Camellia. Both are very closely allied to each other in general appearance, in the form of their leaves and the structure of the flowers. It is by the character of the fruit alone that they can be satisfactorily distinguished for practical purposes ; in that respect the two genera differ very widely.

In both the fruit consists of a roundish, more or less triangular, dry capsule, of three distinct cells, each cell containing one solitary seed or nut. At the period of maturity the dehiscence or bursting takes place vertically, by means of three fissures, extending from the top of the capsule towards its base. So far their capsules are precisely alike ; the following are the points of difference.

In the tea, the capsule is more or less deeply divided into three globular lobes, sometimes appearing as if it consisted of three round capsules united into one. The general outline is therefore always decidedly triangular, with extremely obtuse corners. The bursting proceeds along the middle of the lobes or angles, when a large seed is discovered through each aperture enclosed on all sides within its proper cell, which cell is in fact formed by the corresponding lobe of the fruit.



By this process six valves are, properly speaking, formed, (and not three, as they are generally counted,) each lobe splitting into two hemispherical valves. The partitions alternate with the lobes, and are formed by the sides of two adjoining cells being, as it were, glued together, and extending to the axis of the capsule, from which they at length completely detach themselves, when it disappears altogether. The seeds or nuts are almost globular.

In *Camellia* the capsule is very obscurely triangular without any tendency to become deeply three-lobed. It bursts along the middle of each side (consequently alternately with the corners) into three very distinct valves, each of which belongs to two adjoining cells, because the three partitions originate lengthwise from the middle of the respective valves, and are therefore opposite or contrary to these, converging from thence to the triangular axis, from which they gradually separate, leaving it finally unconnected and free. The seeds are of an oval oblong shape, smaller than those of the tea.

The preceding remarks are made with reference chiefly to the Assam Tea and the Nipal *Camellia*; and purposely without technical precision, the object being simply to convey a general idea of the structure of the two sorts of fruit. But they admit of being applied with safety to all other instances of comparison between the genera in question.

#### *References to the Figures in Plate III.*

A The Assam tea. *Figs.* 1, 2, 3, ripe capsules scarcely enlarged; at 1, seen from below, deeply three-lobed; 2, the common form, commencing to burst; 3, the same completely burst open, and discovering the seeds; 4, the same, the seeds being removed, and one of these represented separately; of the natural size; 5, the lower half of a ripe capsule divided by an horizontal section and the seeds removed, exhibiting the places of dehiscence along the angles or lobes, and the partitions alternating with these and separating from the axis; a little enlarged; 6, outline of a full-grown leaf, of the natural dimensions.

B The Nipal *Camellia* (*C. kissi*). *Fig.* 7, ripe and entire capsule slightly enlarged; 8 and 9, the same after bursting, the free axis being seen in the last figure; 10, a horizontal section as in the tea, much enlarged, representing the places of bursting, which alternate with the angles of the fruit, the partitions which are opposite to the angles of the fruit, and the valves, separating from the free axis; 11, a detached seed, natural size; 12, outline of a full grown leaf.

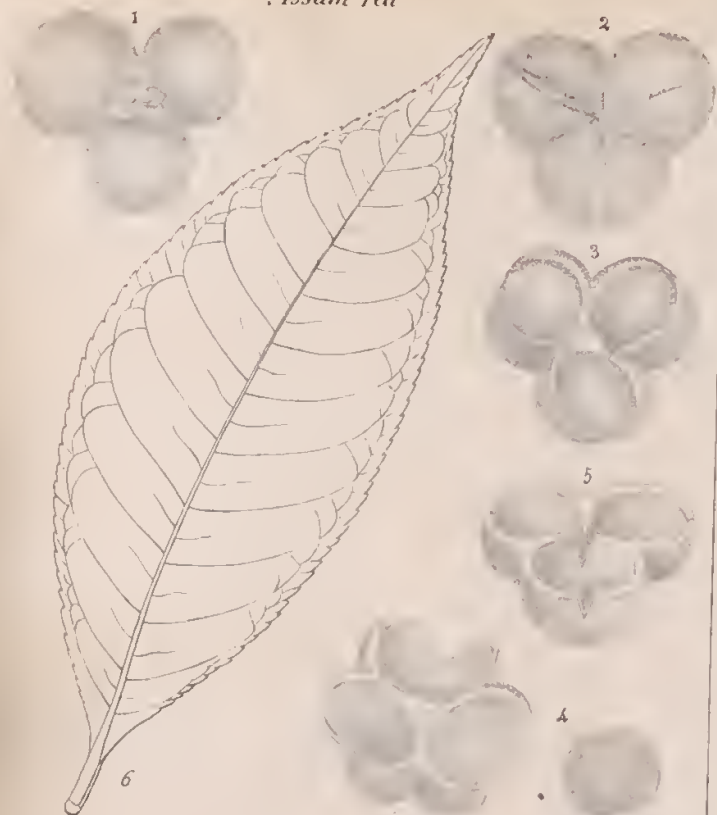
(Signed), N. WALLICH, M. D.

*Off. Sec. to the Com. of Tea Cult.*

*H. C. Bot. Garden, Dec. 24, 1834.*



*Assam Tea*



*Nipal Camellia*





[In the foregoing correspondence, allusion is made to a prior knowledge of the tea-plant of Assam. The following extract from Captain WILCOX's Memoir of a Survey of Assam, published in the Asiatic Researches XVII. p. 448, proves that officer to have been aware of its existence in the hills east of Sadiya:—he writes from Manché, a Khamti village, latitude  $27^{\circ} 29' 16''$ , longitude  $97^{\circ} 29'$ :—"according to promise, a specimen of the tea tree was brought to me from one of the neighbouring low hills; it was a full grown one, that is about five feet high; the leaves were coarse and large, and not numerous." Mr. SCOTT and Captain DAVIDSON had also frequently seen it, and the latter officer says, that black tea is now brought to Goalpara from the Bhotan hills. In 1828, CAPTS. GRANT and PEMBERTON sent specimens of what the natives asserted to be the tea plant to Mr. Secretary SWINTON, from Mánipur, but for want of the fruit, its genuine nature was not identified. These travellers made tea from its leaves, and found it approach very nearly in flavour to ordinary black tea.—Ed.]

V.—*Abstract of Meteorological Observations at Nasirabad. By Lieut.-Col. THOMAS OLIVER.*

TABLE I.—*Barometer reduced to 32°. Temperature of the External Air, and resulting elevation above Calcutta.*

Year and Month.	Barom. at 4 P.M.	Temp. of Air.	Elevation. Feet.	Year and Month.	Barom. at 4 P.M.	Temp. of air.	Elevation. Feet.
		°	Feet.			°	Feet.
Dec. 1832, ..	28·432	55·7	1461	Dec. 1833, ..	28·391	65·4	1518
Jan. 1833, ..	·504	71·4	1440	Jan. 1834, ..	·402	70·0	1511
Feb. ....	·392	74·5	1437	Feb. ....	·392	76·5	1501
March, ....	·334	84·8	1431	March, ....	·281	86·5	1538
April, ....	·234	96·9	1460	April, ....	·212	93·8	1556
May, ....	·059	102·4	1545	May, ....	·101	103·8	1512
June, ....	·031	102·2	1518	June, ....	27·980	101·0	1572
July, ....	27·965	97·1	1543	July, ....	·977	88·1	1576
Aug. ....	28·021	93·9	1543	Aug. ....	28·001	88·2	1534
Sept. ....	·090	98·5	1507	Sept. ....			
Oct. ....	·296	93·7	1484	Oct. ....			
Nov. ....	·425	80·6	1497	Nov. ....			
	28·232	88·5	1489				

It is remarkable that the elevations for the nine months, since December, 1833, are all with one exception so much in excess to those for the same months of the former year: I am at a loss to account for this; the average height of my Barometer for the nine months in question being only ·026 lower than the average for the same months of the preceding year.

TABLE II.—*Mean Temperature of each Month, with the Differences from the Mean of the Year.*

Months.	Temp. Day.	Diff. from Mean.	Temp. Night.	Diff. from Mean.	Temp. Sun-set.	Diff. from Mean.
	°	°	°	°	°	°
January, .....	61·5	— 17·9	57·9	— 17·4	66·0	— 15·8
February, .....	67·8	— 11·6	60·5	— 14·8	67·7	— 14·1
March, .....	75·4	— 4·0	71·9	— 3·4	80·7	— 1·1
April, .....	85·2	+ 5·8	80·9	+ 5·6	88·5	+ 6·7
May, .....	94·6	+ 15·2	89·9	+ 14·6	96·9	+ 15·1
June, .....	93·6	+ 14·2	88·8	+ 13·5	94·6	+ 12·8
July, ....	88·3	+ 8·9	84·7	+ 9·4	88·0	+ 6·2
August, .....	86·1	+ 6·7	82·1	+ 6·8	86·4	+ 4·6
September, .....	86·6	+ 7·2	83·1	+ 7·8	87·7	+ 5·9
October, .....	82·0	+ 2·6	78·0	+ 2·7	85·5	+ 3·7
November, .....	72·7	— 6·7	69·6	— 5·7	77·1	— 4·7
December, .....	58·7	— 20·7	55·6	— 19·7	63·0	— 18·8
Means, .....	79·4		75·3		81·8	

TABLE III.—Temperature of the Air, and Depression (D) of Wet Thermometer.

Year and Month.	Sun-rise.		2½ P. M.		4 P. M.		Sun-set.	
	Temp.	D.	Temp.	D.	Temp.	D.	Temp.	D.
	°	°	°	°	°	°	°	°
December, 1832, .....	48·1	7·6	71·3	18·6	65·7	14·3	64·5	15·4
January, 1833, .....	50·4	9·7	73·3	20·0	71·4	19·1	66·2	16·7
February, .....	52·3	10·4	76·0	20·0	74·5	19·5	65·0	15·5
March, .....	62·7	13·4	86·7	27·1	84·8	26·3	80·3	23·6
April, .....	75·3	20·0	98·8	34·2	96·9	32·9	89·8	27·9
May, .....	82·7	15·6	105·6	34·3	102·4	32·6	96·1	28·2
June, .....	81·9	12·1	104·8	30·0	102·2	28·6	94·5	23·7
July, .....	82·3	7·5	99·8	23·1	97·1	19·2	91·5	15·7
August, .....	78·5	6·4	95·3	19·6	93·9	18·8	89·0	15·3
September, .....	80·9	11·1	100·3	25·9	98·5	25·2	92·6	22·3
October, .....	73·6	15·4	96·5	30·4	93·7	28·8	88·4	25·9
November, .....	62·1	8·2	83·5	20·8	80·6	19·3	77·1	17·4
December, .....	48·5	4·9	67·4	13·6	65·4	13·0	61·5	11·1
January, 1834, .....	49·0	9·4	73·2	20·8	70·0	19·0	65·7	17·4
February, .....	54·3	9·0	78·7	23·4	76·5	22·5	70·4	17·8
March, .....	63·4	13·8	88·4	28·1	86·5	27·2	81·1	23·6
April, .....	71·0	16·2	96·8	31·8	93·8	30·3	87·3	26·6
May, .....	83·5	18·4	105·8	36·6	103·8	35·4	97·6	31·1
June, .....	84·0	12·3	104·1	27·8	101·0	25·5	94·7	21·9
July, .....	80·8	4·4	90·8	12·8	88·1	10·6	84·5	7·3
August, .....	76·9	3·7	89·9	13·1	88·2	12·4	83·8	8·6
September, .....	75·9	2·5	89·7	12·5	..	..	82·9	7·6
October, .....	67·4	5·7	89·4	21·9	..	..	82·5	17·4

TABLE IV.—Dew Point (S), Comparative Tension (T), and Grains of Aqueous Vapour in a cubic foot of Air (G).

Year and Month.	S.	T.	G.	Year and Month.	S.	T.	G.
	°				°		
Dec. 1832, ..	32·2	·371	2·42	Dec. 1833, ..	40·2	·525	3·15
Jan. 1833, ..	28·4	·294	2·11	Jan. 1834, ..	27·3	·289	2·04
Feb. ....	32·0	·265	2·36	Feb. ....	29·4	·261	2·15
March, ....	28·0	·189	2·03	March, ....	30·6	·198	2·20
April, ....	30·0	·139	2·11	April, ....	34·7	·180	2·52
May, ....	30·0	·110	2·08	May, ....	41·3	·163	3·13
June, ....	59·0	·326	5·66	June, ....	64·3	·382	6·69
July, ....	69·5	·500	7·93	July, ....	74·3	·694	9·37
Aug. ....	67·7	·531	7·50	Aug. ....	71·9	·689	8·70
Sept. ....	60·5	·373	5·96	Sept. ....	72·7	·722	8·94
Oct. ....	40·5	·212	3·03	Oct. ....	55·4	·459	5·17
Nov. ....	46·4	·401	3·87	..	..	..	..
Means, ....	43·7	·309	3·92	Means, ....	45·2	·415	4·91

The means for the last year are probably but little affected by the want of observations in November, since the hygrometric state of the air for that month appears to differ not very much from the mean of the year.

[The formula whence the dew-points in the above table are taken will be found in the first Volume of the JOURNAL, p. 508, and in the GLEANINGS IN SCIENCE, i. 193.—ED.]



## Mean Results of four Years' Observations.

Months.	Barometer at 32°		Temperature. of Air.		Mean Temperature.		S.	T.	G.
	4 P. M.	var.	4 P. M.	var.	Day.	Night.			
	inches.		°		°	°	°		
January,	28.475	+ .232	70.6	-17.0	60.9	57.5	31.6	.550	2.36
February,	.387	+ .151	72.2	-11.4	66.4	59.0	34.9	.368	2.66
March, ..	.316	+ .080	84.0	- 4.4	73.5	70.5	34.9	.265	2.66
April, ....	.224	-.010	95.5	+ 5.6	83.6	81.5	37.4	.194	2.80
May, ....	.109	-.127	101.8	+14.7	92.6	88.2	40.1	.175	3.06
June, ....	27.997	-.239	100.7	+14.6	92.5	87.7	63.3	.388	6.52
July, ....	.974	-.262	92.8	+ 9.6	87.5	83.8	71.7	.604	8.60
August, ..	28.024	-.212	88.8	+ 5.7	83.6	81.1	71.5	.679	8.60
September,	.137	-.099	90.9	+ 6.1	84.0	80.9	66.4	.578	7.39
October, ..	.305	+ .069	90.2	+ 2.3	80.7	76.8	46.7	.334	4.00
November,	.431	+ .195	79.3	- 7.7	70.2	66.7	43.2	.392	3.47
December,	.451	+ .215	67.3	-18.3	59.6	56.7	38.2	.479	3.05
Means, ..	28.236	.478	86.2	33.0	77.9	74.2	48.3	.417	4.60

The mean temperature (day and night) from these four year's observations is 76°; but as Nasirabad is elevated above the level of the sea nearly 1500 feet, the air is or ought to be cooler on that account by about 5°·5, so that the temperature at the sea level would be 81·5, which is that assigned to the equator by HUMBOLDT.

If we calculate the mean temperature for the latitude (26° 18') by the formulæ which have been found in most cases to agree well with observation, we shall have,

By MAYER'S,.....	T (= 84°-52° sin² L) .....	= 73·8
BREWSTER'S,....	T (= 81°·5 cos. L) .....	= 73·1
DAUBUISSON'S,..	T (= 27 <sup>d</sup> cos. <sup>2</sup> L in centesimal degrees*) ...	= 71·0
ATKINSON'S,.....	T (= 97°·08 cos. <sup>2</sup> L-10°·53) .....	= 71·9
		Mean = 72·5

which is 9° less than the observations give when reduced to the sea level. But it must be observed with regard to the locality of Nasirabad that it stands on an arid rock on which scarcely any vegetation exists unless during the rainy season: this will no doubt account for a part of the difference. Mr. ATKINSON in his elaborate paper on Astronomical and other Refractions, (vide Memoirs of the Royal Astronomical Society, 2nd volume,) considers that 4° may be deducted from the observed temperatures of "large extended plains:" allowing this, we have still 5° unaccounted for. However, on calculating by the same formulæ, the mean temperatures of several places in this country where observations have been made and recorded in this Journal, I find similar differences, part of which may very probably be owing to errors in the instruments used, as it is well known how great a difference exists in the thermometers manufactured for exportation to this country, no two of which are hardly ever found to agree in their indications, some differing several degrees from others. In the subjoined table, the latitudes and elevations of some of the places are given by rough estimation, not having at hand the means of ascertaining them accurately, but any probable errors in these estimations cannot affect the results materially. The difference of temperature due to elevation has been calculated by Mr. ATKINSON'S Formula, viz.

$$\text{Required diff. in degrees} = \frac{h}{251 + \frac{h}{200}}, \quad h \text{ being the elevation in feet.}$$

\* Or, in Fahrenheit's Scale. . T=80°·6-48°·6 sin² L.

Comparison of Observed Mean Temperatures with those deduced from the Formulæ of  
MAYER, BREWSTER, DAUBUISSON, and ATKINSON.

Places.	Latitude.	Height in feet.	Observed Mean Temperature.	Difference due to Elevation.	Obsd. Mn. Temp. reduced to the sea level.	Mean Temp. by the Formulæ.	Difference between the calculated & observed Mean Temperature.
	<i>o</i>		<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>
Gazipur.....	25.30	400	77.4	1.6	79.0	73.1	—5.9
Fattigurb, ....	27.20	600	75.6	2.4	78.0	71.6	—6.4
Seringapatam, ..	12.30	2412	77.1	9.2	86.3	80.6	—5.7
Nasirabad,....	26.18	1487	76.0	5.5	81.5	72.5	—9.0
Delhi, .....	28.27	800	73.4	3.1	76.5	70.7	—5.8
Calcutta, ....	22.50	100	78.1	0.4	78.5	75.0	—3.5
Landour, ....	30.20	7000	56.7	24.5	81.2	69.1	—12.1

VI.—Longitude of Nasirabad by Lunar Transits and by Observations of Moon Culminating Stars.—By Lieut.-Col. THOMAS OLIVER.

By Lunar Transits.

Months.	Longitude.			Sums of Seconds.	Means.		
	H.	M.	S.		H.	M.	S.
February 16th, 1831,.....	4	58	44	44	4	58	44
Ditto 22nd,.....	..	59	10	114	..	..	57
March 21st, .....	..	58	57	171	..	..	57
Ditto 22nd,.....	..	59	12	213	..	..	61
September 14th,.....	..	58	52	295	..	..	59
Ditto 15th,.....	..	58	47	342	..	..	57
November 12th,.....	..	59	21	423	..	..	60
Ditto 13th,.....	..	59	05	488	..	..	61
February 8th, 1832, .....	..	58	41	529	..	..	59
Ditto 10th,.....	..	59	07	596	..	..	60
March 9th,.....	..	59	12	668	..	..	61
Ditto 10th,.....	..	59	00	728	..	..	61
Ditto 12th,.....	..	59	00	788	..	..	61
April 8th, .....	..	59	07	855	..	..	61
May 7th,.....	..	59	29	944	..	..	63
Ditto 9th, .....	..	58	50	994	..	..	62
June 6th,.....	..	58	59	1053	..	..	62
Ditto 7th, .....	..	58	49	1102	..	..	61
October 1st, .....	..	58	50	1152	..	..	61
November 1st, .....	..	59	09	1221	..	..	61
Ditto 29th,.....	..	58	52	1273	..	..	61
March 1st, 1833, .....	..	59	09	1342	..	..	61
Ditto 28th,.....	..	59	05	1407	..	..	61
Ditto 30th,.....	..	59	05	1472	..	..	61
Ditto 31st,.....	..	59	04	1536	..	..	61
April 28th,.....	..	58	57	1593	..	..	61
Ditto 29th,.....	..	59	16	1669	..	..	62
Ditto 30th,.....	..	59	18	1747	..	..	62
Nvember 17th,..	..	59	00	1807	..	..	62
Ditto 19th,.....	..	58	42	1849	..	..	62
Longitude by Lunar Transits,	..	..	..	..	=	4	59 02

## By Moon Culminators.

Date.	Stars.	Intervals in Sidereal Time.		Longitude.			Sums of seconds multiplied by the No. of stars observed.	Means.		
		M.	S.	H.	M.	S.		H.	M.	S.
1834.										
Jan. 16th, ..	$\mu$ Piscium, ..	-43	48.47	4	58	56	56	4	58	56
Jan. 18th, ..	$\xi$ Ceti, ....	+ 4	16.09	..	..	52	160	..	..	53
	.....	-27	30.16							
Jan. 19th, ..	$\mu$ Ceti, ....	+20	33.68							
	$\lambda$ .....	+ 5	42.92	..	..	60	340	..	..	57
	$f$ Tauri, ....	-25	10.92							
Feb. 18th, ..	$\iota$ Tauri, ....	+20	10.62							
	H Gem. ....	-40	40.58	..	..	64	532	..	..	59
	$\eta$ .....	-51	30.34							
March 16th,	$\alpha$ Tauri, ....	-28	13.52	..	..	48	580	..	..	58
March 17th,	$\alpha$ Tauri, ....	+24	59.84							
	$\zeta$ .....	-36	19.96	..	..	65	775	..	..	60
	C .....	-51	30.38							
March 19th,	$\mu$ Gem. ....	+34	56.58							
	$\epsilon$ .....	+14	08.40	..	..	64	967	..	..	60
	$\beta$ .....	-47	17.70							
March 20th,	$\beta$ Gem. ....	+14	41.18							
	$\delta$ Cancr., ....	-45	24.46	..	..	56	1079	..	..	60
April, 18th, ..	$\xi$ Cancr., ....	+28	27.10							
	$\alpha$ Leonis, ..	-31	16.12	..	..	44	1211	..	..	58
	$\gamma$ .....	-42	33.64							
April 19th, ..	$\alpha$ Leonis, ....	+28	07.98							
	$\gamma$ .....	+16	50.40	..	..	69	1418	..	..	59
	$\sigma$ .....	-41	55.32							
May 17th, ..	$\rho$ Leonis, ....	+39	41.06							
	$\chi$ .....	+ 7	17.52							
	$\gamma$ Virg. ....	-33	35.14	..	..	75	1718	..	..	61
	$\pi$ .....	-48	37.70							
May 18th, ..	$\nu$ Virg. ....	+22	03.22							
	$\pi$ .....	+ 7	00.62	..	..	67	1986	..	..	62
	$\gamma$ .....	-33	53.12							
	$\delta$ .....	-47	52.56							

Longitude by Moon Culminators, ..... = 4 59 02

The exact agreement of the two is of course a mere chance : I think it right however to mention that I have inserted the whole of my observations, and not a selection from them.

VII.—*Proceedings of the Asiatic Society.*

*Wednesday Evening, the 14th January 1835.*

The Reverend W. H. MILL, D. D. Vice-President, in the Chair.

After reading the Proceedings of the last Meeting, the Meeting passed to the Ballot for the Office-bearers of the ensuing year, when the Lord Bishop, the Rev. Dr. MILL, Sir J. P. GRANT, and Mr. W. H. MACNAGHTEN were elected Vice-Presidents; and the Members composing the Committee of Papers last year were unanimously re-elected.

The Honorable Mr. J. B. MACAULAY, the Honorable Colonel W. MORRISON, and Mr. WILLIAM CARR, proposed at the last Meeting, were duly elected Members of the Society.

The Secretary read an Annual Report on the state of the Society.

For the whole of the past year, the Society had been deprived of the presence of its President, who had been driven to the Cape through ill health. The seats of two Vice-Presidents had also become vacant, one by Sir J. FRANK'S departure to Europe, the other, by Sir C. T. METCALFE'S appointment to the Government of Agra. The Obituary List of the past year contained only the venerable name of Dr. CAREY, upon whose death, in June last, a tribute of regret and esteem had been recorded on the Society's proceedings. The fate of another cherished Member, Mr. J. CALDER, remained an object of great anxiety, nothing having been heard of him since he sailed from India for the New Colony at St. George's Sound in October, 1833. The only faint hope of his safety rested in the report of some natives at Swan River, that a wreck had occurred to the northward; and it was satisfactory at least to know, that a vessel had been immediately despatched to ascertain the fact. The result has not yet transpired.

Of Members who had tendered their resignation for various causes, the following names were mentioned: Messrs. G. MONEY, M. T. CLEMISHAW, M. LARULETTA, M. MANUK, and Raja KALIKRISHNA.

The new Members elected, including those of the present Meeting, amounted in number to fifteen, viz. Messrs. W. MARTIN, R. SPIERS, A. BEATTIE, J. S. STOPFORD, W. MACKENZIE, F. RENAULD, Dr. A. HAMILTON, Lieut. W. FOLEY, Lieut. MCLEOD, Lieut.-Col. LOW, Sir J. P. GRANT, Mr. W. GRANT, Honorable T. B. MACAULAY, Honorable Colonel MORRISON, and Mr. W. CARR.

The following distinguished individuals had been associated as Honorary Members: The MEKHARA MENG of Ava, Mr. CSOMA DE KÖRÖS, Professors HEEREN, KLAPROTH, ROSEN, and BUCKLAND, Sir JOHN HERSCHEL, and Col. SYKES.

The Expenses of the year had been very moderate, leaving a considerable balance in the Treasurers' hands.

PAYMENTS.	RECEIPTS.
To paid for Copies of the Journal Asiatic Society, furnished to Members in 1833, ..... 928 0 0	By balance of last year, .. 20 8 5
To Establishment and contingent expenses from 1st Nov. 1833 to 31st Oct. 1834, ..... 2880 6 0	By Subscriptions collected, 5472 6 0
To balance of cash in hand, 3101 10 4	By Interest on Company's Paper, 17,500, at 5 per cent. .... 1417 1 11
Sa. Rs. 6910 0 4	Sa. Rs. 6910 0 4

Outstanding Quarterly Bills due, but not yet collected, Rs. 2817.

The Publications of the past year had been limited to the Index of the 18 volumes of Quarto Researches, now nearly completed, and the Monthly Journal. The printing of M. CSOMA DE KÖRÖS'S Tibetan Grammar was terminated, which would allow a new volume of Researches immediately to be put in hand. The Government had been pleased to express its approbation of the manner in which the Tibetan Dictionary and Grammar have been passed through the press, and



had requested that the Asiatic Society would undertake to distribute copies of the work to the principal learned Societies and Universities of Europe and India. In complimenting the Author upon the successful performance of his task, and ordering payment of printing expences, and arrears of salary, the Governor General was further pleased to direct the sum of money remitted to M. CSOMA by Prince ESTERHAZY and other Hungarian Noblemen in 1832, which was unfortunately lost by the failure of the house of ALEXANDER and Co. to be restored out of the public purse, an act of liberality which will doubtless be appreciated in Vienna.

The Papers submitted to the Society, during the past year, had embraced the discoveries of Bactrian Antiquities by General VENTURA, M. COURT, Dr. MARTIN, Mr. MASSON, Dr. GERARD, Syed KERA'MET ALI, and MOHUN LAL. The notice of various Hindu Inscriptions, and particularly the Translation of one of the Allahabad Inscription, by Captain TROYER and Dr. MILL:—the discovery of a submerged town, replete with antiquities, by Captain CAUTLEY; and many other subjects of considerable interest. In physical research, the progress of discovery had been unprecedentedly rapid, and the gigantic fossil bones exhumated from the lower range of hills, by Dr. FALCONER and Captain CAUTLEY, had even surpassed the noble specimens presented by Dr. SPILSBURY. It was now rendered most probable that a belt of fossil deposit existed throughout the whole line of secondary hills skirting the great Himálayan ridge from Cashmir to Ava. It had been penetrated in a few places—at Sewalik, Kooch Behar, and on the Irawadí; but for many years, it might be anticipated that other spots yet unexplored would continue to furnish abundant stores for the investigation of the geologist and the speculation of the cosmogonist.

#### *Library.*

Read a letter from Monsieur LAIR, Secretary of the Society of Agriculture and Commerce at Caen, forwarding copies of the various publications of that Society for the past two years.

Read a letter from Monsieur DUTROUILLE, Secretary of the Royal Academy at Bordeaux, forwarding copies of its proceedings, &c. for the years 1832 and 33, and proposing an exchange of publications.

Read a letter from Professor J. J. MARCEL, acknowledging his election as an Honorary member, and presenting his recent publications:

*Histoire de l'Egypte depuis la conquête des Arabes jusqu'à celle des Français.*

*Contes Arabes du Shekh el Mohdy, Nos. 10, 11, 12, 13.*

The following Books were also presented:

*Journal of a Tour through the Panjab, Afghanistan, &c. in company with Lieut. BURNES and Dr. GERARD, by Munshi MOHAN LA'L, a native of Delhi—by the author.*

*Papers relative to the Mahratta War in 1833-4, by Mr. G. T. Lushington.*

*Hitopadesi, with a Hindee translation, made by a Pundit of the Raja of Bhartpur—by ditto.*

*Prithivi Raja Basa, a Hindee Poem, by Chand,—by ditto.*

*Journal Asiatique, No. 77, August, 1834—by the Asiatic Society of Paris.*

*Meteorological Register, Nov. and Dec. 1834—by the Surveyor General.*

*A lithographed map of the Indus and the neighbouring countries, from the*

The Government maps—by *M. J. B. Tassin, Artist and Publisher.*

The Indian Journal of Medical Science, No. 13—by the *Editors.*

The following books were received from the Booksellers.

Marsden's Numismata Orientalia, 2nd vol.

Lardner's Cabinet Cyclopaedia—Sismondi's Roman Empire, vol. 1st.

*For the Museum.*

A series of Skulls, consisting of 1 Tiger, 5 Antelopes, 3 Chikaras (Reindeer), 1 Hyena, 3 Wolves, and 2 Pariah Dogs; also Models of the Native Plough, of the Cotton and Spinning Wheel, and that of the Mill for grinding Mustard Seed—also models of Carts, &c. used in the Bhartpur Territory, and 2 Mewátté Spears, presented by Mr. G. T. LUSHINGTON.

*Antiquities.*

Read a letter from Major SUTHERLAND, forwarding the Ancient Inscription presented by Captain J. Low, on the 3rd December.

[A reduced facsimile of this Inscription is given in Plate III.]

An image of Buddha, mutilated in the upper part, was presented by Mr. JAMES STEPHENSON.

A paper was read describing the locality and manner of its discovery at Bukra, near the pillar known as Bhím Sen's Láth in Tirhút. Round the base of the image was a Sanscrit inscription: the sculpture is in good taste and well finished.

Further relics and coins dug up at Behat, near Seháranpur, were received from Captain CAUTLEY.

A letter was read from Captain E. E. WESTMACOTT, 37th N. I. Assistant, Governor General's Agent at Assam, forwarding a description of the town of Sháhpurí in the Udayapur district, and also an account of the Rámsanèhis, a sect of Hindu Schismatics in Western India.

*Physical.*

A collection of the various formations of tufaceous kankar from the bed of the river Jamna, inclosing shells, wood, and bones, was received from Serjeant DEAN, and a further assortment of the fossil bones discovered therein.

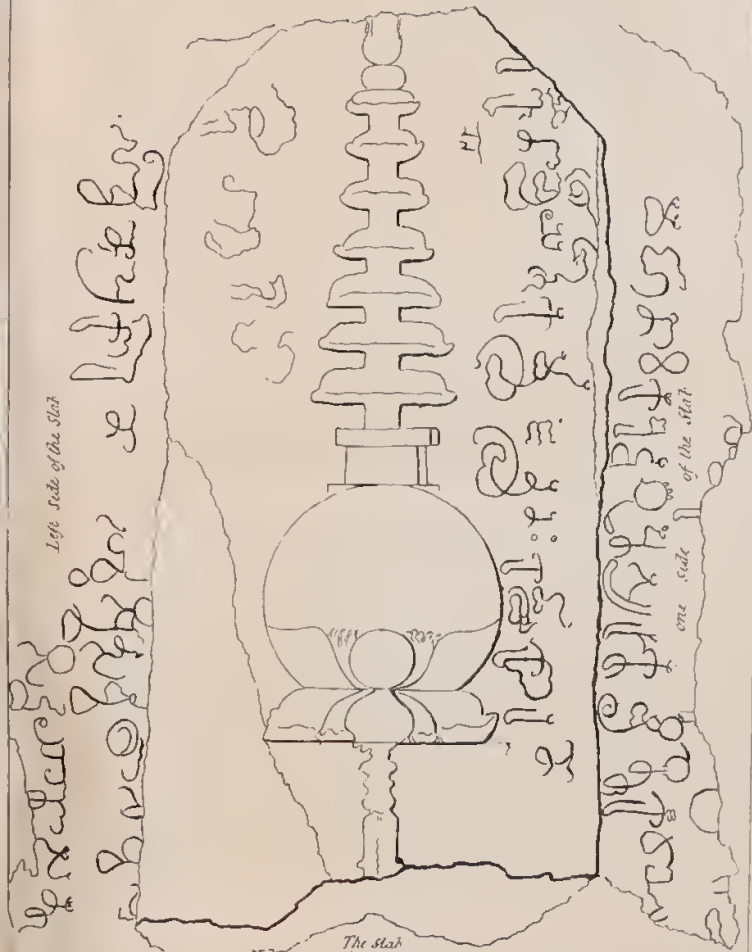
A letter from Dr. SPILSBURY begged the Society would accept of the fossil bones formerly transmitted for its inspection by him.

The following extract from a letter from Major COLVIN, Engineers, was read:

"You have been informed of the successful results of the researches which have lately been carried on in the lower hills in this vicinity for fossil remains, and the subject has been taken up with such spirit and desire to attain information, that in all probability valuable use may be made of the facilities for studying the subject so immediately in the vicinity of the deposit; but it has struck me much good might result from the means of pursuing the inquiry being more extended, by the Society's Museum being provided with specimens of the fossil remains of these hills, and as I am neither a geologist nor have the leisure to make myself one, I have obviously no motive for collecting a cabinet myself. I propose therefore excavating and collecting for the Museum of the Asiatic Society, who will I hope accept of what the party I have set to work may find; they have commenced under an intelligent man, who has learned to

Copy of an Inscription on a Stone found near the ruins of a Buddhist  
Temple in Province Wellesley, Malayan Pen<sup>a</sup>

Upper Side



The Slab  
is broken off here





recognize a fossil at sight, and to be careful in their extraction from the rock when so situated: but so many have been found fallen down from their original position, that many will likely be so now, and the wonder is that they have not been before recognized and brought to notice through the natives in the neighbourhood, who it would now appear have occasionally picked them up. The space I have selected for the operations of my party is the portion of the hills embraced between the embouchures of three mountain torrents, which united form the Sombe river, lying about half way between the Jamna and Nahun, to the right and left of which are the hills from which the specimens already collected have been brought. I may therefore expect to be successful, and though I have not seen the outlets of these three heads of the Sombe, I may presume the sections in the range of hills to be both deep and extensive from the floods which pass down there in the rains. I intend when I have an opportunity to visit them, and in the mean time have taken measures to have the localities of the specimens attached to each as brought out. I expect to be able to despatch the first results of my search from Delhi before three months are over. These fossils appear to me to correspond with those found by Dr. SPILSBURY, described in the Journal for August. One lower end of a thigh bone is little less in breadth than that drawn in the plate, and an end of a corresponding bone of the fore-leg appears to me of equally gigantic dimensions. I believe you have not yet actually seen any thing from these hills, and inclose you a tooth I hammered out of the rock at the Kalowala Pass, wrapped in *Upland Georgia* cotton."

The best thanks of the Society were voted for Colonel COLVIN's obliging offer.

With reference to the same subject, the following extract from a private letter, (received subsequently to the Meeting,) from Dr. H. FALCONER will be read with interest: it is dated Mussooree, 3rd January, 1835.

"You have heard from Capt. CAUTLEY and Lieut. BAKER about the late fossil discoveries up here: I have come in for a lion's share of them. In one of my tours I had to return by Nahun, and having heard of the tooth presented by the Raja, in October, to Lieut. BAKER, I made inquiry and had a fragment of a tooth presented to me also. I got a hint of where they came from, and on going to the ground, I reaped a splendid harvest. Conceive only my good fortune: within six hours, I got upwards of 300 specimens of fossil bones! This was on the 20th November, a couple of days after Lieuts. BAKER and DURAND had got their first specimens through their native collectors.

"Capt. CAUTLEY has since got about 40 specimens: my collection amounts to nearly 400: and it is exceedingly rich and varied. There are more species than Messrs. CRAWFORD and WALLICH got from the Irawaddi. Here are some of the results from a rapid examination of Capt. CAUTLEY's collection, (not including the Kalowala fossils noticed in all his late letters in your Journal,) and my own.

*Mastodon Elephantoides*. A most perfect cheek tooth, left side of lower jaw,  $13\frac{1}{2}$  inches long! indicating an animal of immense size. Portions of the ivory tusks of do., ribs, and huge fragments of bones of the extremities. H. F.'s collection.

*Mastodon Latidens*? cheek tooth doubtful from being water worn. CAUTLEY's.

*Hippopotamus*. Fragment of the lower jaw with teeth. H. F.'s collection.

*Rhinoceros*? doubtful. CAUTLEY's and H. F.'s collections.

*Tapir* ? doubtful from water-wearing ;

*Ruminantia*. A beautiful entire half of lower jaw of a large deer. H. F.'s.

*Crocodile*. Vertebrae of immense size, teeth, and other bones. H. F.'s collection.

*Chelonians*. Two species of Emys, one of Trionyx.

Vertebrae of four distinct mammalia, which the want of means of identifying satisfactorily prevents me from venturing a vague opinion of. A great number of other bones besides, which will admit, many of them, of being determined. There are some traces of new forms of structure : among others a tusk of a Pachydermatous animal, about  $\frac{3}{4}$  of an inch in thickness, longitudinally channeled like the tusks of the Hippopotamus, and curved, with its apex worn down to an oblique disk ; but having a reniform, transverse section, channeled with a deep fossa along its concave curve. This is but the commencement of the discoveries, and among the Pachydermata, I expect many additional results : either in Anoplothera ? Lophiodons and Anthracothera, or analogous forms in their place : and most assuredly Tapirs at least. In fact, in Capt. CAUTLEY'S collection (the Kallowalla one from the clay marle) of which he has given you so much of the details, there is a small tooth, which I imagine belongs to an extinct Pachydermatous animal, allied to Anthracotherium. His zeal is beyond all praise. The moment he got the scent, from some hones I found in the Limli pass, he was off to the field in the Kallowalla Pass, and ever since it has been but a continuous search with him. He has lately turned out a beautiful and most perfect molar tooth of the upper jaw, right side, of a species of the genus Equus, which now puts his inference of the existence of Solipeda in the deposit, at first deduced from an incisor tooth, beyond all doubt. It has the roundish solitary lateral pit of the inner side completely surrounded by a ridge of enamel : whereas in existing species, the pit is open internally, and the ridge of enamel which encircles it, is continuous with the other flexures of enamel of the tooth. It therefore, perhaps belongs to a new extinct species. The Lithological details of the Sewalik formation are equally interesting with the fossil ones, and when worked out, will read as instructive a lesson regarding the Geomorphie operations, at the foot of the Himálayas, during centuries of ages past, as the fossil remains do, regarding the former tenants of the tract. By the bye, the fossils I have mentioned, Mastodon Elephantoides, &c. establish an identity of formation between the upper beds of the Irawaddi deposits and the upper deposits included between the Sewalik and the Himálaya range. Several of them are the same as those found by CRAWFORD and WALLICH ; and it appears, that all along the foot of the Himálaya, from the Panjáb, down to the Irawaddi, there is a nearly continuous series of tertiary formations, more or less upheaved at different points along the line ; but in all their great features, they appear chiefly developed in the Jamna Gangetic portion, where they are upheaved to upwards of 1500 feet above the plains.

In a late excursion to Jamnautri I collected materials for a section from the snowy range on to the plains, like Dr. ROYLE'S, but perhaps more copious. I have found the trap rocks extensively distributed and far in the interior. The whole tract on this side the snow is primitive ; and the line of the snowy peaks is primitive also. I am convinced that they are not like the high mountains of the Andes, porphyries and other trappean masses burst through the surrounding formations ; but primitive schists upheaved to a higher level

than the surrounding hills. You have heard much of the scenery, but I wish you had seen some of it, for no pencil has yet done justice to it. To mention one: conceive yourself on the top of the Choor mountain, nearly 13,000 feet above the level of the sea, a lofty ridge half way between the snowy range and the plains, high above every thing around. Imagine a glance to the north, or front, with an uninterrupted stretch of upwards of 90° of snowy mountains, without a break, clear, white, and dazzling, starting up against a back-ground of deep-blue sky, so rich and intense, as you have never seen: conceive an ocean of mountain waves, running on from your feet to the snow, you looking down upon and overtopping all. Turn round to the rear or south, and you have another sea of hills, with the plains of Hindoostan beyond, stretching far off into the distance, and traversed by here and there a streak of silver, marking the miniature course of the mighty Jumna. Look to right and left, and you have a view of mountains, bounded only by the limits of vision: the huge masses of huddled granite about you forming a fine offset to the whole. I imagine that as a panoramic mountain view, that of the Choor is not to be exceeded in any country, and it is but a sample of the rest. The only want is in lake scenery, and of this there is nothing worthy of the name."

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### VIII.—Miscellaneous.

#### 1.—*Explanation of the differences in the quantity of Rain at different elevations.*

It had invariably been remarked by meteorologists that a rain-gauge, placed at an elevation, collected less rain than one situated on the surface of the ground, yet no satisfactory reason could be assigned for such a discrepancy. The British Association for the Advancement of Science determining to place the facts of the phenomenon on such a footing as to be afterwards capable of tolerably strict analysis, engaged Messrs. W. GRAY and J. PHILLIPS, to conduct a year's experiments on the top of the Cathedral at York, and the result was made the subject of a report by the latter to the meeting at Cambridge in 1833, which sets the matter at rest in a most satisfactory manner.

The site of the experiments was well selected, York being in the centre of a very extensive valley, and the Minster tower, elevated 200 feet from the ground, looks down upon an area of 1000 square miles, with no object of nature or art rising to within 100 feet of its summit.

One gauge of the simplest construction was attached to a pole, elevated nine feet above the battlements, 242 feet above the river;—another was registered on the roof of the museum, 72½ feet;—and a third on the ground in the museum garden, at 29 feet above the river.

The gauges were 10 inches square, and could be easily read off to the 1000th of an inch fall.

The report gives a tabular view of the whole rain of the year, but it will be sufficient here to notice the totals of the 12 months, which were as follows:

	Minster.	Museum.	Ground.
Total Rain-fall in the year,	15·910	20·461	24·401
or deducting a snow storm in Feb.	15·715	20·182	23·785

Mr. PHILLIPS arranges the numerical results of the experiments, in relation to mean temperature, and the season of the year, so as to deduce the *ratios* of quantity at the several stations, in the following table :

Periods.	Mean Temp.	Inches on Minster.	Of Rain,		Ratios.		
			On mu- seum.	On ground.			
Whole year, . . .	48·20	15·715	20·182	23·785	66·1	85·3	100
7 coldest months							
Oct.—April, ..	40·8	7·089	9·725	12·079	58·6	80·5	100
7 warmest months							
April—October,	55·5	11·146	13·669	15·666	71·2	87·1	100
5 coldest months							
Nov.—March,	39·3	4·569	6·414	8·119	56·2	79·	100
5 warmest months,	58·5	8·626	10·457	11·706	73·7	89·2	100
Winter quarter, ..	36·3	1·626	2·326	3·297	49·3	70·5	100
Spring quarter, ..	47·6	3·144	4·202	5·256	59·8	80·	100
Summer quarter,	60·8	6·264	7·414	8·121	77·1	92·5	100
Autumn quarter,..	48·3	4·681	6·240	7·111	65·8	87·7	100

The first remark which occurs on the inspection of this table is that the ratio of diminution of rain for altitude of position is nearly constant. Mr. PHILLIPS shews that it is represented by a simple formula, depending on the square root of the height with one variable co-efficient; or  $m \sqrt{h} =$  the diminution of rain at the given height.

Thus for the whole year ( $m$  being made  $= 2·29$ )

for the Minster,  $m \sqrt{h} = \sqrt{212·8} \times 2·29 = 66·5$ , by observation 66·1, to 100.

for the Museum,  $m \sqrt{h} = \sqrt{43·6} \times 2·29 = 84·9$ , by observation 85·3, to 100.

In like manner for the seven coldest months, ( $m = 2·88$ ), the ratios are found

by calculation, 58 81 100

by observation, 58·6 80·5 100

and for the seven warmest months, ( $m = 1·97$ ), the same quantities are found,

by calculation, 71·3 87·0 100

by observation, 71·2 87·1 100

and so on, for the five-monthly periods of averages. For the shorter periods, the accordance is of course less striking, but it obtains even in single months, and the same formula is found to apply to Dr. HEBERDEN'S experiments on Westminster Abbey, with a due variation in the co-efficient  $m$ . Whence it is concluded that the relation to height is constant.

But it is evident that the values of the *variable* co-efficient were very different; that its maxima and minima, were, perhaps, not quite in the same periods of the year at Westminster as at York, and that the range of variation in its value is much less. From M. ARAGO'S determination of the relative quantities of rain falling on the observatory at Paris, and in the court below, the relative mean value of  $m$ , at Paris  $= 1·24$ ; while at Westminster, it is 4·23; and at York, 2·29. These discrepancies are discouraging, and will probably deprive the most exact local determinations of a general application. However, on account of the re-



markable regularity of the progress of monthly temperature at York, and some obvious relations between the quantity of rain collected, and the mean temperature of the period, some inferences unavoidably suggested themselves.

*First.* The diminution at the upper stations is greatest in the cold, and least in the warm seasons, and therefore the co-efficient is in some way *inversely* dependent on the temperature. Mr. PHILLIPS found the relation very nearly represented by the formula  $2m = a \frac{t}{t'} + a \frac{t^2}{t'^2}$  where  $a$  = the ascertained value of  $m$  for the whole year,  $t$  the mean temperature of ditto, and  $t'$  that of the particular period.

*Secondly.* The relation between the values of  $m$  and the *dryness* of the air is inverse, whether expressed by the difference between the mean temperature and the dew point, or, as that is seldom known, by the *mean range* of daily temperature, which had been determined for York from a long series of observations by Mr. F. CHOLMELEY, to be as follows:

January range, ..	8.0	May, .....	19.7	September, .....	16.0
February—, .....	10.1	June, ....	20.1	October, .....	11.8
March—, .....	13.1	July, ....	19.6	November, .....	9.0
April—, ..	16.2	August, ..	17.7	December, .....	7.7
General mean daily range, 14.08					

Now if  $m$  be taken inversely as the mean range of temperature,  $r$ , or  $m = a \frac{14.08}{r}$ , the accordance between the calculated and observed values of the co-efficient is very close:

( $a = 2.29$ .)

	value of $m$ .	value of $m$ .
for the 7 coldest months, by calculation,	2.98	by observation, 2.88
7 warmest months, —————	1.86	————— 1.97
5 coldest months, —————	3.36	————— 3.06
5 warmest months, —————	1.73	————— 1.73

and so on throughout. The concluding remarks of Mr. PHILLIP'S explain the hypothesis he has framed for the explanation of the phenomenon which led to the experiments, and to us it appears most clear and conclusive.

“So remarkable and continued an accordance between the co-efficients fixed by observation and those derived by two methods from a very simple view of the condition of the air as to heat and moisture, appears to me decisive of the question as to the general cause of the *variation of the quantity of diminution of rain at any one height* above the ground. It has already been shown how strictly the observations warrant the conclusion that the *ratio of diminution at different heights is constant* through the whole year. It is therefore rather as a matter of very probable inference than a plausible speculation that I offer the hypothesis, that the whole difference in the quantity of rain, at different heights above the surface of the neighbouring ground, is caused by the continual augmentation of each drop of rain from the commencement to the end of its descent, as it traverses successively the humid strata of air at a temperature so much lower than that of the surrounding medium as to cause the deposition of moisture upon its surface. This hypothesis takes account of the length of descent, because in passing through more air more moisture would be gathered; it agrees with the fact that the augmentation for given lengths of descent is greatest in the most humid seasons of the year; it accounts to us for the greater absolute size of rain-drops in

the hottest months and near the ground, as compared with those in the winter and on mountains; finally, it is almost an inevitable consequence from what is known of the gradation of temperature in the atmosphere, that some effect of this kind must necessarily take place. The very common observation of the cooling of the air at the instant of the fall of rain, the fact of small hail or snow whitening the mountains, while the very same precipitations fall as cold rain in the valleys where the dew point may be many degrees above freezing is enough to prove this. A converse proof of the dependence of the quantity of rain at different heights on the state of the air at those heights, is found in the rarer occurrence of a shower falling from a cloud, but dissolving into the air without reaching the ground. Lastly, I cannot forbear remarking, that this hypothesis of augmentation of size of the elementary drops agrees with the result that the increase of quantity of rain for equal lengths of descent is greatest near the ground: for whether the augmentation of each drop be in proportion to its surface or its bulk, the consequence must be an *increasing rate* of augmentation of its quantity as it approaches the ground.

“The direct mathematical solution of this problem, now that the laws of cooling and of the distribution of temperature have undergone such repeated scrutiny, may perhaps be attempted with success; but for the purpose of eliminating the effects of periodical or local modifying causes, it is desirable that observations on the same plan should be instituted at many and distant places,—both along the coasts and in the interior,—in the humid atmosphere of Cornwall and in the drier air of the mid-land counties. Always, at least three stations should be chosen, as open as possible, one of them very near to the ground: their relative heights, the mean temperatures, the mean ranges of temperature, and the mean dew point for each month should be ascertained. It would be useful to measure the size of the rain-drops, and, if possible, their own temperature. The height of clouds according to the plan of Mr. DALTON, in his *Meteorological Essays*, and the direction and force of wind should be noted, and distinctions made between snow, hail, and rain. Some of these data I have not yet found the means of procuring, partly in consequence of the great labour and time required, and partly from the difficulty of well arranging the experiments themselves. But since it is now ascertained that the general results follow some settled laws, and that the effects may be very well appreciated at moderate heights, I hope not only to procure these, but also several other data towards the completion of the theory of this curious subject, the patient investigation of which cannot fail to give us new and penetrating views into the constitution of the atmosphere.”

It will be a curious subject of investigation to determine the applicability of the law of altitude and moisture to this country, and to fix the value of *m*. This latter may, in some measure, be done from the long series of observations published in the Surveyor General's Meteorological Register: but for the law of height, we shall require a higher station, and we invite any zealous meteorologist who may have leisure to fix his pluviometer on the top of the OCHTERLONY monument; a chuprassee may easily be taught to observe it daily throughout the rains.

## 2. *An unusual Sea-Monster in the Bay.*

[Extract of a Letter from Lieut. W. FOLEY, 25th Nov. 1834.]

On my voyage to Madras (in May last), I saw a most extraordinary fish, and which had never before been seen by any seaman on board, although some of the

officers and crew had been employed in the whale fishery. It was of the size of a whale, but differing from that animal in shape; spotted like a leopard, in a very beautiful manner: it came close under the stern of the ship, during a calm, and we had a magnificent opportunity for viewing it: it had a very large dorsal fin, which it moved about with great rapidity when made angry in consequence of the large stones that we threw down upon it rashly; for it possessed sufficient strength to have broken the rudder and stove in the stern of the ship. Several large fish (seemingly Dog-fish), about a cubit in length and upwards, were gamholing about the monster, entering its mouth at pleasure and returning to the water again. The following will give you some idea of its shape. The mouth very large, dorsal fin black or dark-brown, tail also; body covered with brown spots like a leopard, head lizard-shaped. May it not be the *Plesiosaurus*, or a species of that fish known to have existed formerly in the waters of the ocean? Having given you this statement, it is proper that I should give you the names of those who were also eye-witnesses of the existence of this extraordinary animal. They are as follows:

1. Captain TINGATE, at that time commanding the ship "*Cashmere Merchant*," now commanding the "*Competitor*."

2. Mr. SMELLIE, Mr. PIKE, and Mr. LANDERS, officers of the vessel.

The above gentlemen will corroborate my statement: Captain TINGATE and Mr. SMELLIE were old sailors, and had never before seen the fish, or one resembling it. There were also several European seamen on board, not one of whom had ever seen it before.

[All we can venture to say on this authenticated account is, that the monster described is not a *Plesiosaurus* as Lieutenant FOLEY suggests; as that reptile has no "dorsal fin." What it may be, we must leave others more competent to decide, but the unusual nature of the notice should by no means prevent the insertion of a description supported by such unequivocal evidence.—ED.]

### 3. *Suspension of the Survey of the Brahmaputra River.*

For the last four years, an accurate trigonometrical survey of the Brahmaputra has been in progress, to connect the map of this river from Goalpára, where it terminated in Captain WILCOX's Survey of the Assam Valley, (see the 138th sheet of the "*Indian Atlas*," or the lithographed map in the 17th volume of *Researches*,) with the surveys of the Ganges, the Sunderbans, and finally with the grand meridional arc. Captain WILCOX and Lieutenant OMMANNEY, Engineers, completed the measurement of the Jenai, which now forms the main stream of the Brahmaputra, from Jumálpur to its confluence with the Ganges at Jáfirganj, and the latter officer had in 1830 since been engaged in tracing the line of the river from goalpára round the difficult country at the root of the Kásia mountains, to within 30 miles of Dacca, when a sudden order of Government lately directs the whole work to be suspended, and in fact, all that has been done, to be rendered comparatively useless for want of the connecting link which it would not have taken three months to complete! Geographers at home will be at a loss, as we ourselves are, to account for a measure apparently so impolitic, and we cannot help thinking, that a word of explanation to the proper authorities would still be in time to remedy the mistake.

*Meteorological Register, kept at the Assay Office, Calcutta, for the Month of January, 1835.*

Day of the Month.	Observations at 10 A. M.						Observations at 4 P. M.						Register Thermometer Extremes.		Wind.		Weather.			
	Standard Barometer at 32°.	Wet Barometer do.	Air Temp. deduced.	Ther. in air.	Wet-bulb.	Depression.	Leslie's dif.	Hgrom.	Hair Hygrometer.	Cold on roof.	Heat in sun	Rain, inches.	Morning.	Evening.	Morning.	Evening.	Weather.			
1	29.880	.050	.330	70.0	8.0	7.1	7.8	7.8	.86	.810	.832	.878	71.2	10.5	9.6	18	54.0	90.	clear.	clear.
2	29.884	.120	.374	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	55	95.	do	do
3	29.890	.134	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	54	94.8	do	do
4	29.892	.138	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
5	29.894	.142	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
6	29.896	.146	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
7	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
8	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
9	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
10	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
11	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
12	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
13	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
14	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
15	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
16	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
17	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
18	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
19	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
20	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
21	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
22	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
23	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
24	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
25	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
26	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
27	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
28	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
29	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
30	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
31	29.898	.150	.376	68.1	8.0	7.0	7.6	7.9	.808	.898	.920	.908	71.2	10.6	10.3	79	53	98.	do	do
Mean	29.897	.314	.633	67.8	8.0	7.6	7.6	7.6	.908	.127	.781	.781	70.7	11.5	10.6	74	..	..	northerly air	clear-cold weather.

The object of the present year's observations will be to show what reliance may be placed on a Barometer, the tube of which has been wetted with well-boiled water before filling in the mercury. The instrument used has been registered for some months past. Comparison is also made of a differential thermometer for measuring the depression of temperature produced by evaporation, and the ordinary wet-bulb thermometer. The instruments used are the same as during the last year.

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